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ABSTRACT

GED "Scoreboost" materials target exactly the skills one needs to pass the General Educational Development (GED) tests. This book focuses on the Mathematics test, with material to help develop the skills needed for whole numbers, decimals, fractions, and percents. The workbook presents 16 strategies for skill development: (1) use a problem-solving plan; (2) determine whether there is enough information; (3) use estimation to solve problems; (4) break problems into smaller steps; (5) solve set-up problems; (6) use the Casio fx-260 calculator; (7) solve decimal problems using a calculator; (8) grid answers for whole number and decimal problems; (9) decide which operation to use with fractions; (10) use estimation with fraction problems; (11) solve fraction problems using a calculator; (12) solve ratio and proportion set-up problems; (13) grid answers to fraction and ration problems; (14) use the percent circle; (15) use a calculator to solve percent problems; and (16) choose the system that works best for you. The test taker should practice these activities, complete the two GED practice activities, and take the GED practice test at the end of the book. (SLD)

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GED Scoreboost™

MATHEMATICS

Whole Numbers, Decimals, Fractions, and Percents

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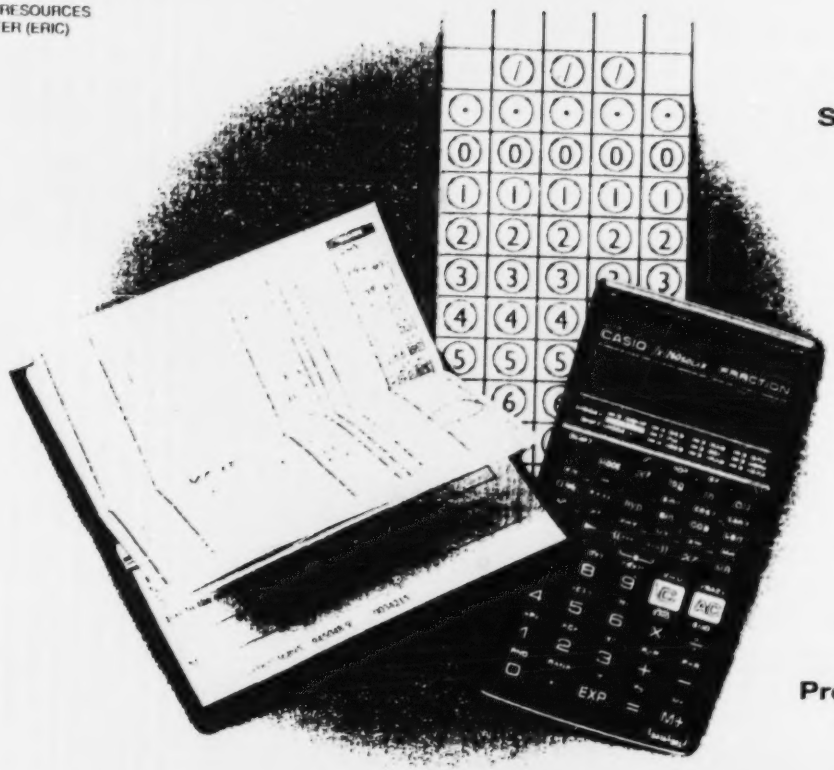

Scientific Calculator, Grids, and Problem-Solving Strategies

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The GED Scoreboost™ Advantage

GED Scoreboost materials target the skills that you need to pass the GED. To develop this program, we have built on decades of experience in teaching GED classes and preparing materials for hundreds of thousands of students who have passed the GED. We have studied the GED Tests thoroughly and have designed materials that will help you succeed on the tests.

To prepare for the GED Mathematics Test, you will need to learn skills in number and operation sense, data and statistics, geometry and measurement, and algebra. However, to pass the test, you will need to develop skills in these key areas:

- **Calculator Skills**—You will be given a Casio *fx*-260 solar scientific calculator at the GED Testing Center. You may use it on Part I, which is half of the GED Math Test.

  You shouldn't wait until the day of the test to learn to use this calculator. It is more complicated than a regular calculator, and you need to make sure that you know how to use it effectively. Check with local office supply businesses or discount stores to find where you can buy a Casio *fx*-260. Buy one for yourself, work with it as you learn the *GED Scoreboost* strategies, and use it when you go shopping or pay your bills. If you do this, working with it on the GED Math Test will be a snap.

- **Problem Solving**—The GED Math Test is made up mostly of word problems and graphics. To pass the GED, you need to be skilled at solving these types of problems.

  No one learns to be a good problem solver overnight. To prepare for the GED Math Test, you need to practice with the types of problems that you will see on the test and to learn strategies for solving them. The *GED Mathematics Scoreboost* books are based on proven problem-solving strategies.

- **Grids**—Forty out of fifty questions on the GED Math Test will be multiple-choice. The other ten problems are an alternate format that require you to solve them and then record your answer on a grid.

  GED Mathematics Scoreboost will give you lots of practice filling in both of the types of grids that you will see on the test.

This is the ***GED Scoreboost Advantage:*** Practice the sixteen strategies in this book, apply them to the two *GED Practice* activities, and then take the *Practice GED Test* at the end of this book.

You can also use these other books to prepare for the GED Math Test:
GED Mathematics Scoreboost: Measurement and Data Analysis
GED Mathematics Scoreboost: Algebra and Geometry

To get more information about these and other *GED Scoreboost* titles, see the back of this book.

Good luck!
The GED Scoreboost Team

STRATEGY 1 Use a Problem-Solving Plan

Most of the word problems on the GED Math Test are based on life or work situations. You will probably know how to solve many of the problems using your personal experience. However, when you come across a challenging problem, you can use a **problem-solving plan.**

1. **Understand** Read the problem carefully to understand the situation. Make sure you understand the question. It may help to restate it in your own words.
2. **Choose** Choose the facts and the operations you will need to solve the problem. The operations are **addition, subtraction, multiplication,** and **division.**
3. **Solve** Do the math. Perform the calculations using the facts and the operations that you chose.
4. **Look Back** Check your answer if possible. Ask yourself these questions:
   "Does my solution answer the question asked in the problem?"
   "Does my answer seem reasonable?"

EXAMPLE: Monica borrowed $1120 from her parents to buy a computer system. She agrees to pay them back in eight equal monthly payments. How much will she pay each month?

THINK: I can use the four-step plan.

1. **Understand:** I need to find the payment amount for 1 month.
2. **Choose:** I have the total amount, and I know there are 8 equal payments. I can divide to split a quantity into equal parts.
3. **Solve:** $1120 ÷ 8 = $140
4. **Look Back:** I had to find the amount of the monthly payment. $140 is a reasonable monthly payment. I can check by multiplying: $140 × 8 = $1120.

SOLUTION: Monica will make eight equal payments of **$140.**

GED Problem

Dan can ship up to 4 pounds for $10. The contents of a package weigh 2.8 pounds. How many more pounds can Dan add to the package without paying more for shipping?

(1) 0.2
(2) 1.2
(3) 2.2
(4) 6.8
(5) 7.2

THINK: I can use the four-step problem-solving plan.

1. **Understand:** I need to find how much more 4 pounds is than 2.8 pounds.
2. **Choose:** Subtract to find the difference. Ignore the cost of the shipment because I don't need it to solve the problem.
3. **Solve:** 4 – 2.8 = 1.2 pounds.
4. **Look Back:** If Dan adds 1.2 pounds to 2.8 pounds, the total weight will be 4 pounds. The answer makes sense.

ANSWER: (2) 1.2

TESTWISE ① ② ③ ④ ⑤ To help you understand a problem, restate the question in your own words.

Apply the Strategy

Directions: Use the problem-solving plan with the problems below. For problems 1–3, first write the operation that you will use to solve the problem.

1. Jesse needs $2500 for a down payment on a car. So far, he has saved $1735. How much more does he need for the down payment?

   (1) $265
   (2) $765
   (3) $785
   (4) $1265
   (5) $4235

   Operation: _____

   Answer: _____

2. A basketball player scored 288 points in 16 games. How many points did she average each game?

   (1) 16
   (2) 18
   (3) 27
   (4) 30
   (5) 33

   Operation: _____

   Answer: _____

3. Craig can run a mile in 7.5 minutes. If he keeps the same pace, how many minutes will it take him to run 3 miles?

   (1) 10.5
   (2) 13.5
   (3) 18
   (4) 21
   (5) 22.5

   Operation: _____

   Answer: _____

4. The area of Gail's family room is 35 square yards. How much will it cost to carpet the room if the carpet (including installation) is $14 per square yard?

   (1) $49
   (2) $163
   (3) $280
   (4) $490
   (5) $686

5. A portion of the Dominguez family's utility bill is shown below.

This bill covers the period from 6/08 to 8/08.	
Electricity Total	$69.96
Water Total	$102.90
Sewer Charge	$48.76
Garbage Pickup	$12.00

   How much did the family pay for utilities for the two-month period?

   (1) $116.81
   (2) $172.86
   (3) $233.62
   (4) $292.02
   (5) $467.24

6. Using her car's odometer, Michi figures out that her drive to work and back is 15.8 miles. If she works 5 days per week, how many miles does she drive going to and from work each week?

   (1) 3.16
   (2) 10.8
   (3) 39.5
   (4) 79.0
   (5) 94.8

Answers start on page 42.

STRATEGY 2 Determine Whether There Is Enough Information

Many problems contain more information than you actually need to solve them. For example, when a problem is based on a table, there is a great deal of information. To be a successful problem solver, you need to use only the information required to answer the specific question.

There are also a few problems on the GED Math Test that will not contain all the facts you need to find an answer. If you are certain that necessary information is missing, you should choose option **(5) Not enough information is given.** You may see this answer option on several questions, but it will be the correct choice only a few times.

EXAMPLE: Anthony needs a hard drive for his computer. He finds the following table in a newspaper advertisement.

	17" Monitor	Hard Drive	Ink Jet Printer
In-Store Price	$162.00	$193.95	$110.00
In-Store Rebate	$55.00	$49.50	$39.00

For each piece of equipment purchased, the store will pay the manufacturer's rebate to the customer. If Anthony buys the hard drive in the advertisement, how much would the price of the hard drive be after the rebate?

THINK: I need to find the price of the hard drive and the amount of the rebate for the hard drive. Then I can subtract to find the after-rebate price.

Step 1: Read the labels on the rows and columns. Find the column labeled Hard Drive. The in-store price of the hard drive is $193.95. The in-store rebate is $49.50. Ignore the remaining prices.

Step 2: Subtract: $193.95 – $49.50 = $144.45.

SOLUTION: The after-rebate price of the hard drive is **$144.45.**

GED Problem

At a city park, 75 girls and 93 boys signed up to play volleyball. How many teams can the park form?

(1) 168
(2) 18
(3) 14
(4) 12
(5) Not enough information is given.

THINK: I should divide the total number of children by the number of children on each team. The problem does not tell how many children are on each team. Therefore, I don't have all of the facts I need.

ANSWER: (5) Not enough information is given.

TESTWISE
① ② ③ ④ ⑤

Don't jump to the conclusion that you don't have enough information. Some problems require an additional step or two before you have the information to solve the problem.

Apply the Strategy

Directions: Solve the problems below. For problems 1–3, write the facts you would need to answer the question. If a needed fact is missing, choose *Not enough information is given.*

1. Matt earns $11 per hour for the first 40 hours he works each week. He is paid $16.50 for each hour over 40 hours. If Matt worked 38 hours this week, how much will he be paid?

   (1) $418.00
   (2) $440.00
   (3) $627.00
   (4) $660.00
   (5) Not enough information is given.

   Needed Facts: _____

   Answer: _____

2. Nita buys a television set and VCR for $780, including tax and warranty. She finances the purchase through the store. If the sales tax on the purchase is $64 and the extended warranty is $35, how much will each payment be?

   (1) $65.00
   (2) $73.25
   (3) $99.00
   (4) $879.00
   (5) Not enough information is given.

   Needed Facts: _____

   Answer: _____

3. A theater has 240 seats. Tickets to an evening performance of a play are $22. Tickets to an afternoon performance are $14. If the Friday night show is sold out, how much will the theater earn in ticket sales for Friday night?

   (1) $1920
   (2) $3360
   (3) $5280
   (4) $8640
   (5) Not enough information is given.

   Needed Facts: _____

   Answer: _____

4. A new housing project will be built on a 22-acre piece of land. Roads will take up 5.2 acres, and the remainder will be divided into 42 lots for houses. How many acres will be divided into lots for houses?

   (1) 0.4
   (2) 16.8
   (3) 27.2
   (4) 36.8
   (5) Not enough information is given.

Questions 5 and 6 refer to the following information.

Craft Station

Item	Price	Quantity
Craft Foam	$4.95	12 sheets per package
Wood Sticks	$6.95	Box of 300
Dino Erasers	$8.95	Box of 72
Beanbags	$1.75	Each
Magnets	$4.95	Box of 24

5. For a project at her child's school, Shandra needs 15 dozen wood sticks. How many dozen sticks are in the box of wood sticks listed in the table? (*Hint:* 1 dozen = 12)

   (1) 180
   (2) 27
   (3) 25
   (4) 6
   (5) Not enough information is given.

6. At another store, Shandra sees a box of beanbags for $24. How much would it cost to buy the same number of beanbags at Craft Station?

   (1) $42.00
   (2) $21.00
   (3) $17.50
   (4) $10.50
   (5) Not enough information is given.

Answers start on page 42.

STRATEGY 3 Use Estimation to Solve Problems

When you **estimate** the solution to a problem, you are finding an approximate answer. In some cases, you can use estimation as a shortcut to finding a solution. In other cases, a GED problem may ask for an estimate by saying something like "About how many..."

Two methods for estimating are:

1. **Rounding**—Round each number to a convenient place value.
   Example: 5690 – 2940 becomes 5700 – 3000.
2. **Compatible numbers**—Use numbers that are easy to work with.
   Example: 624 ÷ 7 becomes 630 ÷ 7 because 63 is a multiple of 7.

EXAMPLE: Miri earns $9.34 per hour. About how much will she earn for 28 hours of work?

THINK: Since this asks for an estimate, I can round both numbers and multiply.

Step 1: Miri's hourly wage $9.34 rounds to $9, and 28 hours rounds to 30 hours.
Step 2: Multiply: 30 × $9 = $270.

SOLUTION: Miri will earn **about $270** during the week.

GED Problem 1

Madison has 8,753 registered voters. In a recent election, only 2,869 people voted. How many registered voters did not vote?

(1) 5,694
(2) 5,884
(3) 6,984
(4) 11,622
(5) 16,884

THINK: I can round the numbers, subtract, and compare my estimate to the answer choices.

Step 1: 8,753 becomes 9,000 and 2,869 becomes 3,000. Subtract: 9,000 – 3,000 = 6,000.

Step 2: The number closest to 6,000 is (2) 5,884. You can check your answer by adding 5,884 + 2,869 to get 8,753.

ANSWER: (2) 5,884

GED Problem 2

Dan needs to drive from Billings to El Paso, a distance of 1180 miles. If he drives for four days, how many miles must he average each day?

(1) 205
(2) 250
(3) 295
(4) 590
(5) 4720

THINK: I can use compatible numbers to estimate.

Step 1: The number 1180 is nearly 1200, which is easily divisible by 4: 1200 ÷ 4 = 300.

Step 2: Option (3) is close to the estimate of 300. In fact, 1180 ÷ 4 = 295.

ANSWER: (3) 295

TESTWISE ① ② ③ ④ ⑤

Always make a quick estimate before using a calculator. If your estimate is very different than the calculator result, you may have pressed a wrong key.

Apply the Strategy

Directions: Solve the problems below. For problems 1–3, first estimate an answer. You may be able to use your estimate to select the correct answer.

1. At a plant nursery, 4-inch plants are on sale for $2.29 each, and larger plants are $8.77 each. What would be the cost of nine 4-inch plants?

   (1) $9.16
   (2) $11.06
   (3) $20.61
   (4) $36.00
   (5) $78.93

   Estimate: _____

   Answer: _____

2. For a family reunion, Max reserves twelve rooms in a hotel. The total charge for these rooms for one night is $870. If each room costs the same amount, what is the charge for one room?

   (1) $64.00
   (2) $72.50
   (3) $99.50
   (4) $104.40
   (5) $112.60

   Estimate: _____

   Answer: _____

3. Yuki has $1058 in her checking account. If she writes checks for $389 and $210, how much will she have left in her account?

   (1) $179
   (2) $459
   (3) $669
   (4) $848
   (5) $1657

   Estimate: _____

   Answer: _____

Questions 4 and 5 refer to the following information.

Gregson Printing usually orders heavyweight color paper for $7.80 per package. Janet, an employee at Gregson, has found a new company that sells cartons of the paper for $43.92. Each carton holds 8 packages.

4. Janet's boss asks her to order 312 packages of heavyweight color paper. If Janet buys the paper by the carton, how many cartons should she order?

   (1) 7
   (2) 17
   (3) 28
   (4) 39
   (5) Not enough information is given.

5. About how much money will Janet save by buying a carton of eight packages for $43.92 instead of eight packages at the individual price? (*Hint:* Find the cost of eight packages at the individual price, then subtract the price of a carton.)

   (1) $20
   (2) $36
   (3) $50
   (4) $60
   (5) $280

6. Samantha wants to buy a cargo van. The retail price for the vehicle is $22,190. If she buys by October 1, she can get a dealer's discount of $3,202 and a manufacturer's rebate of $1,500. After both price reductions, what is the approximate cost of the van?

   (1) $25,000
   (2) $23,000
   (3) $20,000
   (4) $19,000
   (5) $17,000

Answers start on page 42.

STRATEGY 4 Break Problems into Smaller Steps

Sometimes you will need to perform more than one calculation to solve some problems on the GED Math Test. Before you choose an approach, always think about what the question in the problem is asking you to find. Then plan a series of operations to answer that question.

EXAMPLE: The Grahams' grocery bills for the last three weeks totaled $118.92, $97.65, and $102.48. How much is their average weekly grocery bill?

THINK: I need to find the average of the three amounts. Finding an average is a two-step process. I should add the amounts and then divide by the number of amounts (3).

Step 1: Add: $118.92 + $97.65 + $102.48 = $319.05

Step 2: Divide: $319.05 ÷ 3 = $106.35

SOLUTION: The Grahams' average weekly grocery bill is **$106.35.**

GED Problem 1

Anne needs to buy her son some school uniforms. Pants are $22 each, and shirts are $16. If she buys three pairs of pants and five shirts, how much will she spend?

(1) $66
(2) $80
(3) $146
(4) $158
(5) $304

THINK: I will have to multiply to find the amount spent on pants and the amount spent on shirts. I can then find the total amount spent by adding those amounts.

Step 1: 3 pair of pants × $22 = $66 for pants

Step 2: 5 shirts × $16 = $80 for shirts

Step 3: Add: $66 + $80 = $146

ANSWER: (3) $146

GED Problem 2

Scott paid $200 down for a stereo system. He also agreed to make 12 monthly payments of $85. How much will he pay in all for the stereo system?

(1) $1020
(2) $1220
(3) $1380
(4) $2400
(5) $3420

THINK: The amount Scott will pay is the total of the down payment and the 12 monthly payments. I can multiply to find the total of the monthly payments.

Step 1: Multiply: $85 × 12 = $1020

Step 2: Add: $1020 + $200 = $1220

ANSWER: (2) $1220

TESTWISE ① ② ③ ④ ⑤

On the GED, answer choices may include the result of working only one step of the problem. Don't be fooled. Keep working until you have answered the question.

Apply the Strategy

Directions: Solve the problems below. For problems 1–3, first write the operation you will use for each step.

1. Judy spent 3 hours driving 165 miles. She thinks she can reach her final destination in 4 more hours if she averages 65 miles per hour. What is the total length of the trip in miles? [*Hint:* To find distance, multiply rate (miles per hour) by time.]

   (1) 230
   (2) 260
   (3) 425
   (4) 560
   (5) 690

   Step 1: _____ Step 2: _____

   Answer: _____

2. Karen sells newspaper subscriptions. She earns $12 for each daily subscription and $4 for each Sunday-only subscription. How much will she earn if she sells 24 daily and 13 Sunday-only subscriptions in a week?

   (1) $176
   (2) $252
   (3) $288
   (4) $340
   (5) $592

   Step 1: _____ Step 2: _____

   Step 3: _____

   Answer: _____

3. The area of a rectangular rug is found by multiplying the length by the width. If a rug measuring 6 feet by 10 feet costs $324, what is the price per square foot?

   (1) $4.50
   (2) $5.40
   (3) $5.90
   (4) $6.30
   (5) $6.50

   Step 1: _____ Step 2: _____

   Answer: _____

4. George is counting the calories he eats. His doctor gives him the following table of common breakfast foods.

Food	Amount	Calories
Oat cereal	1 cup	95
Milk, skim	1 cup	85
Banana	1 medium	100
Orange juice	1 cup	120

   If George eats 2 cups of oat cereal with 1 cup of skim milk and drinks 2 cups of orange juice, how many calories has he consumed?

   (1) 300
   (2) 395
   (3) 420
   (4) 465
   (5) 515

5. Henry repairs household appliances. He keeps track of how much time he spends at each house. On Monday, his first four repairs take 18, 24, 90, and 36 minutes. What is the average time, in minutes, spent per repair?

   (1) 42
   (2) 54
   (3) 56
   (4) 168
   (5) Not enough information is given.

6. Vanya earns $13 per hour. If she works 40 hours per week, how much will she earn in 26 weeks?

   (1) $5,460
   (2) $10,400
   (3) $13,520
   (4) $33,800
   (5) $41,600

Answers start on page 42.

STRATEGY 5 Solve Set-Up Problems

In some GED problems, you are asked to choose an expression that shows how to solve the problem. One strategy for solving a **set-up problem** is to write your own expression to represent the problem. Then you can compare your expression to those in the answer choices.

The **commutative property** is a useful rule for recognizing possible question set-ups. This property states that you can add (or multiply) numbers in any order without changing the result. For example, 3 + 4 has the same value as 4 + 3, and 2(8) is equal in value to 8(2).

Note: In expressions, we often show multiplication by writing two numbers next to each other with one inside parentheses; for example, 2(8) means 2 × 8.

EXAMPLE: Stuart, Brad, and Robin plan to split the cost of a gift equally. The gift includes a sweater for $28 and a $50 gift certificate. What expression could be used to find the amount each friend will pay?

THINK: I can solve the problem by adding to find the cost of the gift and dividing the total by the number of friends.

Step 1: Write the addition step: $28 + $50.

Step 2: Show this sum divided by 3. You can use either the division symbol: ($28 + $50) ÷ 3 or you can use the fraction bar as a division symbol: $\frac{28+50}{3}$.

SOLUTION: Either of these expressions is correct: **($28 + $50) ÷ 3** or $\frac{\mathbf{28+50}}{\mathbf{3}}$.

GED Problem

Movie tickets are $9 for adults and $5 for children. Lynn buys 2 adults' tickets and 3 children's tickets. She hands the cashier $40. Which expression below could be used to find the amount of change Lynn receives?

(1) 2($9) + 3($5)
(2) 2($9) + 3($5) – $40
(3) $40 – ($5 + $9) × (2 + 3)
(4) $40 + 2($9) + 3($5)
(5) $40 – [2($9) + 3($5)]

THINK: I can write an expression for solving the problem and compare it to the choices.

Step 1: The cost of the children's tickets can be written as 3($5). The cost of the adults' tickets can be written 2($9). The total cost is 3($5) + 2($9). Use brackets to show that the entire contents of the brackets should be subtracted from $40: $40 – [3($5) + 2($9)].

Step 2: Compare. Option (5) adds the prices in the reverse order, but its value is the same.

ANSWER: (5) $40 – [2($9) + 3($5)]

TESTWISE ① ② ③ ④ ⑤

If you know how to solve the problem but don't know how to write the set-up, go ahead and solve the problem. Then find the value of each option. If a value matches your answer, that option is correct.

Apply the Strategy

Directions: Solve the problems below. For problems 1–3, write your own expression first.

1. At a gas station, county road maps are $3 each, and state road maps are $4 each. In a week, the station sold 12 state maps and 8 county maps. Which of the following expressions could be used to find the total amount the station collected for the maps?

   (1) 12($4) + 8($3)
   (2) 8($4) + 12($3)
   (3) 12($7) + 8($7)
   (4) 20($4 + $3)
   (5) 20($4)($3)

   Expression: _____

   Answer: _____

2. Sally bought seven cans of Prime Cut dog food. Each can sold for $1.09. Sally redeemed a manufacturer's coupon for 70 cents at the cash register. Which of the following expressions could be used to find out how much Sally paid for the dog food?

   (1) 7($1.09)($0.70)
   (2) ($1.09)(7) – 70
   (3) $0.70 + ($1.09 × 7)
   (4) 7($1.09) – $0.70
   (5) 7($1.09 – $.70)

   Expression: _____

   Answer: _____

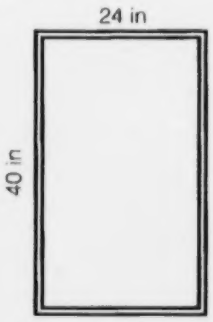
3. Jordi earned the following scores on five math tests: 90, 84, 86, 92, and 100. Which of the following expressions could be used to find Jordi's average score on the tests?

   (1) (90 + 84 + 86 + 92 + 100) ÷ 4
   (2) (100 + 84) ÷ 2
   (3) (90 + 84 + 86 + 92 + 100) × 5
   (4) $\frac{90 + 84 + 86 + 92 + 100}{5}$
   (5) $\frac{5}{90 + 84 + 86 + 92 + 100}$

   Expression: _____

   Answer: _____

4. To make new screens for his dining room windows, John will need to buy enough framing material to go around the edge of each window. If there are two windows in the dining room with the measurements shown here, which of the following expressions could be used to find how many inches of framing material John will need?



   (1) 2(24)(40)
   (2) 2(24 + 40)
   (3) 4(24 + 40)
   (4) 2(24) + 2(40)
   (5) 4(24)(40)

5. Angela had $30. She bought 2 movie tickets for $9 each and popcorn and drinks for a total of $6. Which of the following expressions could be used to find how much money she has left?

   (1) $30 – 2($9 + $6)
   (2) $30 – [2($9) + $6]
   (3) ($9 × 2) + $6 – $30
   (4) $30 – $9 – $6
   (5) 2($30 – $9 – $6)

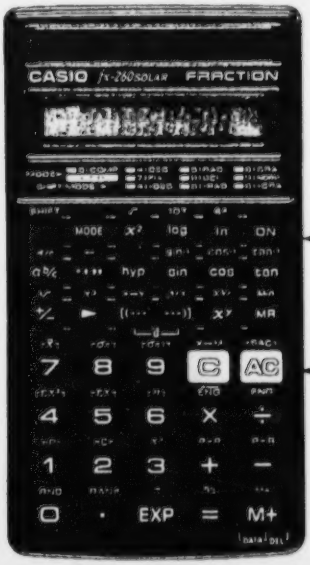
6. Daniel is installing four ceiling fans in his home. The fans are $39 each. The cost to ship each fan is $5. Daniel has a $20 coupon that he can apply to his total purchase. If Daniel uses the coupon, which of the following expressions shows how much he will pay to buy the fans and ship them to his home?

   (1) 4($39) + $5 – $20
   (2) 4($39 + $5) – $20
   (3) 4($39 – $20) + 4($5)
   (4) 4($39) – $20 – 4($5)
   (5) 4($39 + $5 – $20)

Answers start on page 42.

STRATEGY Use the Casio *fx*-260 Calculator

You are allowed to use the Casio *fx*-260 Solar calculator on Part I of the GED Math Test. This calculator, shown here, will be provided at the testing center. You should practice with this scientific calculator before you take the GED Math Test.



A scientific calculator has more keys than you will need. Review the diagram to become familiar with the calculator face. To reset the calculator, press either the ON or AC key before starting a problem.

Remember, the calculator is a tool. Use it when it will help you save time and mental energy. As you have already seen, you can often find an answer by estimating or by using paper and pencil.

EXAMPLE: The populations of two cities are 4866 and 9419. What is the combined population of the cities?

THINK: I can add these numbers quickly using a calculator.

Step 1: Press [ON] to reset the calculator.
Press: 4866 [+] 9419 [=]
The display reads: [14285.]

Step 2: Check using estimation: 5,000 + 9,000 = 14,000. The answer 14,285 is close to 14,000.

SOLUTION: The combined population is **14,285.**

GED Problem

With every paycheck, Erik pays $56 towards his family's health care plan, and his employer contributes $248. Erik receives 26 paychecks per year. What is the total annual cost to Erik and his employer for his health plan?

(1) $1704
(2) $3960
(3) $6448
(4) $7904
(5) $8580

THINK: I can add $56 and $248 on a calculator and then multiply by 26.

Step 1: Press [ON]. Press: 56 [+] 248 [=]
The display reads: [304.]

Step 2: Be sure you pressed the equals key so that the entire sum will be multiplied by 26. Press: [×] 26 [=]. The display reads: [7904.]

Step 3: Estimate to check: I know that $50 + $250 equals $300, and $300 × 25 is $7500. The answer should be close to $7500.

ANSWER: (4) $7904

TESTWISE ① ② ③ ④ ⑤

Another quick way to check your work is to input the problem a second time in the calculator to see if you get the same answer.

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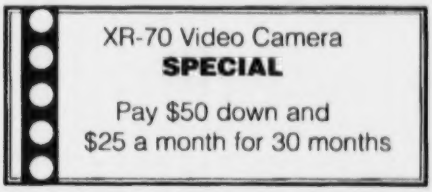
Apply the Strategy

Directions: Solve the problems below. For problems 1–3, first decide whether there is an advantage to using a calculator. Write *Yes* or *No*.

1. The camera advertised below is priced at $628. How much more will you pay if you buy it on the payment plan described here?



(1) $122
(2) $172
(3) $523
(4) $897
(5) $1622

Use a calculator? _____

Answer: _____

2. The land area of Utah is 82,168 square miles. The land area of Nevada is 109,806 square miles. How many square miles larger is Nevada than Utah?

(1) 17,738
(2) 27,638
(3) 27,748
(4) 27,774
(5) 187,974

Use a calculator? _____

Answer: _____

3. Four friends started a dog-training business. They spent $1838 on a 3-month lease, $426 on advertising, and $672 on equipment. If they split the costs equally, how much has each friend contributed?

(1) $460
(2) $566
(3) $734
(4) $978
(5) $1098

Use a calculator? _____

Answer: _____

4. A restaurant has 3 dining rooms. Each dining room has 12 booths that will seat 4 people each, 15 tables that will seat 4 people, and 6 tables that will seat 6 people. How many people in all can be seated in the restaurant?

(1) 99
(2) 144
(3) 213
(4) 396
(5) 432

5. A business has four rectangular parking lots. Each lot measures 70 by 185 feet. You can find the area of a rectangle by multiplying the length and width. What is the total area in square feet of the four parking lots?

(1) 51,800
(2) 23,800
(3) 12,950
(4) 5,180
(5) 5,040

6. Patricia is thinking of changing telephone calling plans. To know which plan is best for her, she keeps track of the number of long distance minutes she uses for four months. The results are shown below.

Month	Number of Minutes
January	253
February	346
March	271
April	286

What is the average number of long-distance minutes Patricia uses each month?

(1) 313
(2) 299
(3) 294
(4) 289
(5) 272

Answers start on page 42.

STRATEGY 7 Solve Decimal Problems Using a Calculator

To solve decimal problems with a calculator, you must interpret the display. On a calculator, decimals are always displayed using the fewest decimal digits possible. For instance, if the answer is $0.50, the calculator will show only 0.5.

If the display shows more decimal digits than you need, round your answer. If you are working with money, round the answer to the nearest cent, which is the hundredths place.

EXAMPLE: Marc bought a roll of film for $4.85, a camera battery for $2.32, and a tube of sunscreen for $8.53. What did the three items cost before tax?

THINK: I can add the numbers quickly with a calculator.

Step 1: Press: 4.85 [+] 2.32 [+] 8.53 [=]
The display reads: [15.7]

Step 2: Interpret the display. Since the answer is money, 15.7 means **$15.70.**

Decimal point

GED Problem 1

Canned corn is on sale at three cans for $0.98. At that rate, how much would one can of corn cost?

(1) $0.30
(2) $0.32
(3) $0.33
(4) $0.48
(5) $0.66

THINK: I need to divide $0.98 by 3.

Step 1: Press: .98 [÷] 3 [=]
The display reads: [0.326666666]

Step 2: Round to the nearest cent.
The decimal 0.326 rounds to 0.33.

ANSWER: (3) $0.33

GED Problem 2

Margaret is planning a banquet for 114 people. If each table will seat eight people, how many tables will she need to seat the guests?

(1) 14
(2) 15
(3) 17
(4) 143
(5) 912

THINK: I need to divide 114 by 8.

Step 1: Press: 114 [÷] 8 [=]

Step 2: The decimal part of the number is a remainder. Since it doesn't make sense to have only a fraction of a table, I should round up to 15 tables. Besides, if I round down to 14 tables, only 112 people will be seated.

ANSWER: (2) 15

TESTWISE
① ② ③ ④ ⑤

Some GED test questions will state the place-value column to which you should round. Always read carefully. Some of the wrong answer choices may be based on errors in rounding.

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Apply the Strategy

Directions: Solve these problems with a calculator. For problems 1–3, decide whether you will need to round your answer. Write *Yes* or *No*.

1. Based on the amount of rainfall recorded during the six-day period listed, what was the average amount of rainfall, in inches? Round to the nearest tenth inch, if necessary.

Mar 4: 4.4 in	Mar 7: 3.6 in
Mar 5: 4.8 in	Mar 8: 1.8 in
Mar 6: 6.0 in	Mar 9: 2.4 in

(1) 3.6
(2) 3.7
(3) 3.8
(4) 3.9
(5) 4.0

Do you need to round? _____

Answer: _____

2. A large container holds 4.2 liters of cleaning fluid. If 1.75 liters are poured into a smaller container, how many liters of cleaning fluid are left in the larger container?

(1) 2.45
(2) 2.975
(3) 3.45
(4) 3.95
(5) 5.95

Do you need to round? _____

Answer: _____

3. Marco's Mart charges $3.98 for a pound of lean ground beef. How much will a customer pay for 2.6 pounds of lean ground beef?

(1) $4.78
(2) $8.22
(3) $8.56
(4) $9.45
(5) $10.35

Do you need to round? _____

Answer: _____

Questions 4 and 5 refer to the following information.

Time card: Week of August 4 **Employee:** Linda Perez	
Monday	6.5 hours
Tuesday	8.25 hours
Wednesday	7.75 hours
Thursday	5.25 hours
Friday	9 hours

4. If Linda is paid $10.50 per hour, how much did she earn on Wednesday, to the nearest cent?

(1) $68.25
(2) $77.50
(3) $81.38
(4) $82.00
(5) $84.00

5. What was the length of the average workday, to the nearest tenth hour, that Linda worked during this five-day period?

(1) 7.3
(2) 7.4
(3) 8.3
(4) 8.5
(5) 36.8

6. A piece of copper tubing is 550 centimeters in length. A plumber needs to cut short lengths, measuring exactly 75 centimeters, from the larger piece. How many of the short lengths can she cut?

(1) 6
(2) 6.7
(3) 7
(4) 7.3
(5) 8

Answers start on page 43.

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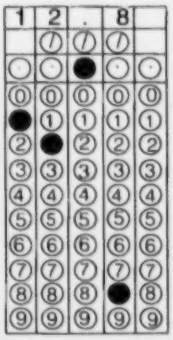
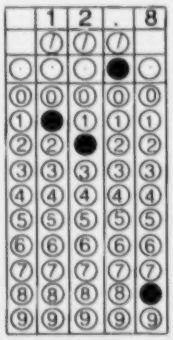
STRATEGY 8 Grid Answers for Whole Number and Decimal Problems

Not all of the problems on the GED Math Test are in multiple-choice form. Some will require you to solve the problem and then fill in a grid on the answer sheet.

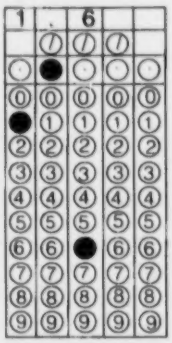
To record an answer, write it in the top row of boxes on the grid. You may start your answer in any column as long as it will fit in the five columns provided. If your answer contains a **decimal point,** the decimal must occupy its own column. Fill in the circles below each number or symbol in your answer. Leave any unused columns blank.





The grids to the right show two ways to enter the number 12.8.

EXAMPLE: Jan is shipping a package. According to an electronic scale, the package weighs 4.2 pounds. After Jan removes a book from the package, it weighs only 2.6 pounds. What was the weight, in pounds, of the book?



Mark your answer in the circles in the grid.

THINK: I need to subtract the weight of the book.

Step 1: 4.2 – 2.6 = 1.6 pounds

Step 2: Fill in the grid. Make sure the decimal point has its own column.

SOLUTION: The book weighs **1.6 pounds.** One way to mark the grid is shown to the right.

GED Problem

A spool holds 140 feet of chain. How many lengths of chain measuring 2.5 feet long can be cut from the spool?

Mark your answer in the circles in the grid.

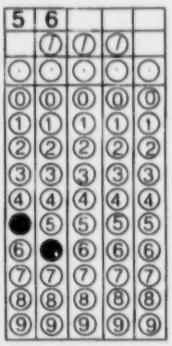
THINK: I should divide.

Step 1: Divide: 140 ÷ 2.5 = 56.

Step 2: Fill in the whole number answer on the grid.

ANSWER: 56

One way to mark the grid is shown here.



TESTWISE ① ② ③ ④ ⑤

Use opposite operations to check calculations when possible. Use addition to check subtraction and multiplication to check division.

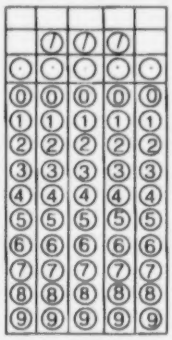
Apply the Strategy

Directions: Solve the problems below and mark your answers in the grids. For problems 1–3, indicate if you will fill in a decimal point in your answer.

1. An appliance store sells two sizes of Energy-Saver refrigerators. The RC-300 model holds 25.2 cubic feet. The RC-200 holds 21.6 cubic feet. How many more cubic feet does the RC-300 hold than the RC-200?

   Mark your answer in the circles in the grid.

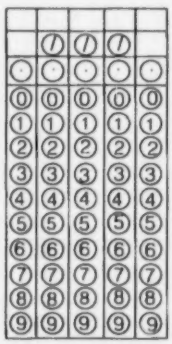
   Decimal Point? _____



2. Thomas rode his bicycle 3.4 miles on Monday, 2.8 miles on Tuesday, and 4.8 miles on Wednesday. How many miles did he ride during the three-day period?

   Mark your answer in the circles in the grid.

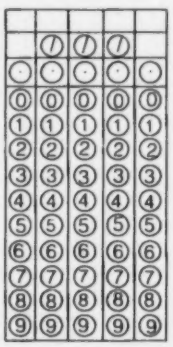
   Decimal Point? _____



3. One prescription tablet contains 0.525 milligram of a medication. How many milligrams of medication will a patient consume in one day if the patient is instructed to take four pills per day?

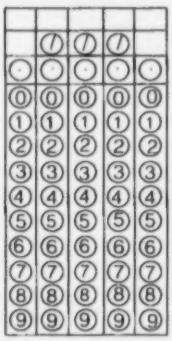
   Mark your answer in the circles in the grid.

   Decimal Point? _____



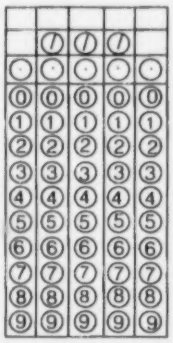
4. Talia is keeping track of the amount of gasoline she buys per month. During February, she bought 12.7 gallons, 10.8 gallons, 12.4 gallons, and 11.1 gallons. How many gallons of gas did she buy in February?

   Mark your answer in the circles in the grid.



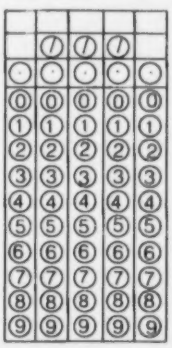
5. Rick filled each of 15 small bags with 0.75 pound of candy to hand out at his son's birthday party. How many pounds of candy did Rick start with if he used all of the candy?

   Mark your answer in the circles in the grid.



6. Kira works 6.5 hours per day. In September, she worked 24 days. How many hours did Kira work in September?

   Mark your answer in the circles in the grid.



Answers start on page 43.

GED Practice 1: Whole Numbers and Decimals

Part I: You may use a calculator.

For questions 1 through 4, choose the one best answer. Fill in the grid for question 5.

1. A portion of Monica's monthly expenses is shown in the table below.

Billing Period:	May 6–June 6
Electricity	$73.85
Natural gas	$48.97
Phone	$39.53
Cable	$35.95

For the expenses shown, how much were Monica's monthly expenses from May 6 to June 6?

(1) $49.58
(2) $75.48
(3) $162.35
(4) $198.30
(5) $295.40

2. A theater seats 175 people. Tickets to an afternoon show are $5. Tickets to an evening show are $9. If an evening show sells out, how much will the theater earn in ticket sales for that evening?

(1) $315
(2) $875
(3) $1575
(4) $2450
(5) Not enough information is given.

3. John traveled 120 miles in 2 hours. He will be home in 3 more hours if he averages 65 miles per hour. If John is able to maintain that speed, how many miles will he have traveled in 5 hours? [*Hint:* Distance equals rate (miles per hour) multiplied by time.]

(1) 185
(2) 195
(3) 240
(4) 315
(5) 325

4. Marco is thinking of switching cell phone companies. To know which company will be the least costly for him, he looks at past bills to see how many prime-time minutes he used. The results are shown below.

Month	Prime-Time Minutes
March	282
April	428
May	370
June	285
July	365

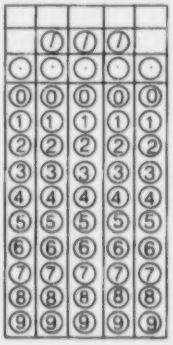
What is the average number of prime-time minutes Marco uses each month?

(1) 282
(2) 324
(3) 346
(4) 365
(5) 370

5. Alicia is keeping a log of her car's gas mileage. The last 4 entries in the log are 24.15, 26.26, 23.46, and 28.75 miles per gallon. What value could Alicia give for her car's overall average miles per gallon?

Round your answer to the nearest hundredth.

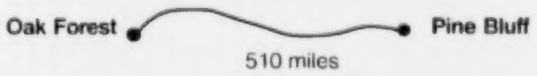
Mark your answer in the circles in the grid below.



Part II: You may not use a calculator.

For questions 6 through 9, choose the one best answer. Fill in the grid for question 10.

6. Darla drives from Oak Forest to Pine Bluff to visit her family. If she averages 60 miles per hour, how many hours does the trip take?



(1) 5.1
(2) 6.0
(3) 8.0
(4) 8.5
(5) 10.0

7. Carly buys a couch and chair for $840. She finances the purchase through the store. If the sales tax on the purchase is $63 and the cost to have the fabric treated is $50, how much will each payment be?

(1) $70.00
(2) $79.42
(3) $113.00
(4) $953.00
(5) Not enough information is given.

8. Michael bowled games with scores of 275, 245, and 288. Which of the following could be used to find Michael's average score?

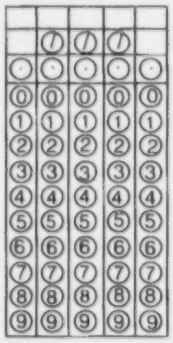
(1) $(275 + 245 + 288) \div 5$
(2) $(245 + 288) \div 2$
(3) $(275 + 245 + 288) \times 3$
(4) $\dfrac{275 + 245 + 288}{3}$
(5) $\dfrac{3}{275 + 245 + 288}$

9. Andrea buys five cans of soup priced at $0.55 each. She also uses a coupon for $0.30 off that brand of soup. Which of the following expressions could be used to find out how much Andrea paid for the cans of soup?

(1) $5(\$0.55)(\$0.30)$
(2) $(\$0.55)(5) - 30$
(3) $\$0.30 + (\$0.55 \times 5)$
(4) $5(\$0.55) - \$0.30$
(5) $5(\$0.55 - \$0.30)$

10. Myra works 8.5 hours per day. How many hours would she work in 20 days?

Mark your answer in the circles in the grid below.



Answers start on page 43.

Evaluation and Study Plan

Check your answers. Then evaluate your results and make a study plan.

Results:	I need to work more on:
☐ Five or fewer correct • *Need to study more*	☐ Problem Solving (Questions 2, 3, and 4)
☐ Six to seven correct • *Need to review*	☐ Decimals (Questions 1, 6, and 7)
☐ Eight to ten correct • *Ready to move on*	☐ Set-up problems (Questions 8 and 9)
	☐ Calculator skills (Questions 1–5)
	☐ Filling in grids (Questions 5 and 10)

STRATEGY 9 Decide Which Operation to Use with Fractions

One of the challenges in working with fractions is choosing the correct operation. You know that addition is used to combine quantities and find a total. Subtraction is used to find how much greater or less one number is than another.

When you find a *part of* a number, you multiply. For example, if you need to find $\frac{3}{4}$ *of* 100, multiply: $\frac{3}{4} \times 100 = 75$. When you want to find how many fractional amounts are in an amount, you divide. For example, to find how many $\frac{1}{2}$-inch lengths are in 6 inches, you would divide: $6 \div \frac{1}{2} = 12$ lengths.

EXAMPLE: If Jack earned \$400 and put $\frac{1}{5}$ of the money in savings, how much did he save?
THINK: I need to find $\frac{1}{5}$ of \$400. If I need to find a *part of* an amount, I multiply.

$$\$400 \times \frac{1}{5} = \frac{\overset{80}{\cancel{400}}}{1} \times \frac{1}{\underset{1}{\cancel{5}}} = \frac{80}{1} = \$80$$

SOLUTION: Jack put **\$80** in savings.

GED Problem 1

How many jars holding $\frac{2}{3}$ quart each can be filled from a container holding 12 quarts?

(1) 8
(2) 12
(3) 15
(4) 18
(5) 24

THINK: I should divide to find how many equal smaller containers can be filled from a larger one.

To divide by a fraction, invert the fraction and multiply:

$$12 \div \frac{2}{3} = 12 \times \frac{3}{2} = \frac{\overset{6}{\cancel{12}}}{1} \times \frac{3}{\underset{1}{\cancel{2}}} = \frac{18}{1} = 18 \text{ smaller containers}$$

ANSWER: (4) 18, which makes sense because there should be more than 12 smaller containers.

GED Problem 2

David spent $\frac{1}{4}$ of his $6\frac{1}{2}$-hour workday on the phone. How many hours did he spend on the phone?

(1) $1\frac{5}{8}$
(2) 2
(3) $3\frac{1}{4}$
(4) 4
(5) $6\frac{1}{4}$

THINK: I should multiply to find a fraction of a number.

MULTIPLY:

$$6\frac{1}{2} \times \frac{1}{4} = \frac{13}{2} \times \frac{1}{4} = \frac{13}{8} = 1\frac{5}{8} \text{ hours}$$

ANSWER: (1) $1\frac{5}{8}$, which makes sense because this is a fraction of $6\frac{1}{2}$ hours.

TESTWISE ① ② ③ ④ ⑤

When you multiply by a fraction, your answer will be smaller than the number that you multiplied because you are finding a part. When you divide by a fraction, you will get a larger number because you are finding the number of parts.

Apply the Strategy

Directions: Solve the problems below. For problems 1–3, first write the operation that you will use to solve the problem.

1. Sarah spends $\frac{2}{3}$ of her monthly take-home pay on rent, food, and clothing. If she earns $1830 in take-home pay each month, how much does she spend on rent, food, and clothing?

   (1) $610
   (2) $915
   (3) $990
   (4) $1220
   (5) $2745

   Which operation? _____

   Answer: _____

2. Two cities are $3\frac{1}{2}$ inches apart on a map. The map scale says that $\frac{1}{4}$ inch = 1 mile. How many miles apart are the two cities?

   (1) 11
   (2) 12
   (3) 14
   (4) 16
   (5) 20

   Which operation? _____

   Answer: _____

3. Lance worked $6\frac{1}{4}$ hours Monday and $4\frac{7}{8}$ hours on Tuesday. How many more hours did he work on Monday than on Tuesday?

   (1) $1\frac{3}{8}$
   (2) $2\frac{3}{8}$
   (3) $2\frac{5}{8}$
   (4) $2\frac{7}{8}$
   (5) $11\frac{1}{8}$

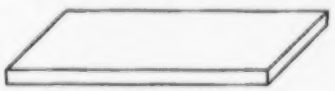
   Which operation? _____

   Answer: _____

4. Jan is using a cake that calls for the following liquid ingredients: $\frac{1}{3}$ cup cooking oil, $1\frac{1}{4}$ cups buttermilk, $\frac{1}{8}$ cup water. How many cups of liquid will she use to make the cake?

   (1) $1\frac{1}{8}$
   (2) $1\frac{3}{8}$
   (3) $1\frac{1}{2}$
   (4) $1\frac{3}{4}$
   (5) $1\frac{17}{24}$

5. A carpenter made a shelf using the pine board shown here. He used $\frac{5}{8}$ of the length. What was the length, in inches, of the shelf?



36 in

   (1) $7\frac{1}{2}$
   (2) $14\frac{2}{5}$
   (3) $18\frac{5}{8}$
   (4) $22\frac{1}{2}$
   (5) $26\frac{1}{2}$

6. A stack of books is 35 inches high. If each book is $1\frac{3}{4}$ inches thick, how many books are in the stack?

   (1) 15
   (2) 20
   (3) 30
   (4) 61
   (5) 105

Answers start on page 43.

STRATEGY 10 Use Estimation with Fraction Problems

For a multiple-choice problem, an **estimate** may be all you need to choose the correct option. At the very least, an estimate is a good way to make sure your answer is reasonable.

- If the numerator is more than half of the denominator, the fraction is greater than $\frac{1}{2}$ and you **round up.** For example, $\frac{2}{3}$ rounds up to 1 and $7\frac{5}{7}$ to 8.
- If the numerator is less than half of the denominator, the fraction is less than $\frac{1}{2}$ and you **round down.** For example, $1\frac{1}{3}$ rounds down to 1 and $6\frac{3}{7}$ to 6.

EXAMPLE: For a home improvement project, June bought $2\frac{3}{8}$ pounds of woodscrews and $3\frac{3}{4}$ pounds of finishing nails. How many pounds of hardware did she buy in all?

THINK: I can estimate an answer first by rounding to the nearest whole number. Then I will work the problem to find the exact answer.

Step 1: $2\frac{3}{8}$ rounds down to 2 and $3\frac{3}{4}$ rounds up to 4.

Step 2: Add the rounded numbers: 2 + 4 = 6 pounds. I know the answer is close to 6 pounds.

Step 3: Solve: $2\frac{3}{8} + 3\frac{3}{4} = 2\frac{3}{8} + 3\frac{6}{8} = 5\frac{9}{8} = 6\frac{1}{8}$ pounds.

This answer makes sense because it is close to the estimate.

SOLUTION: June bought **$6\frac{1}{8}$ pounds** of hardware.

GED Problem

If one can of frozen lemonade concentrate makes $2\frac{1}{3}$ quarts of lemonade, how many cans of concentrate will it take to make twenty-one quarts of lemonade?

(1) 4
(2) 6
(3) 7
(4) 9
(5) 14

THINK: I will round to the nearest whole number and divide.

Step 1: Estimate. The amount $2\frac{1}{3}$ rounds down to 2 quarts. To make the numbers easier to work with, round 21 to 20 quarts.

Step 2: Divide: 20 ÷ 2 = 10 quarts. Only option (4) is close to the estimate. You can check option (4) by mentally multiplying:

$$9 \times 2\frac{1}{3} = (9 \times 2) + (9 \times \frac{1}{3}) = 18 + 3 = 21$$

ANSWER: (4) 9

TESTWISE ① ② ③ ④ ⑤

Look carefully for all the information you need to solve a problem. For example, in the problem above, you need to use the number *twenty-one* (21), which is written in words in the problem.

Apply the Strategy

Directions: Solve the problems below. For problems 1–3, first write an estimate and then write the exact solution.

1. Marcie goes biking on a city bike trail 3 times a week. If the trail is $2\frac{4}{5}$ miles long, how many miles does Marcie ride each week?

   (1) 14
   (2) $8\frac{2}{5}$
   (3) $7\frac{1}{5}$
   (4) $6\frac{4}{5}$
   (5) $4\frac{2}{5}$

   Estimate: _____

   Answer: _____

2. Rick bought 3 packages of ground beef. The packages weigh $3\frac{3}{4}$ pounds, $1\frac{1}{8}$ pounds, and $2\frac{1}{2}$ pounds. How many pounds of ground beef did Rick buy?

   (1) $6\frac{3}{8}$
   (2) $6\frac{3}{4}$
   (3) $7\frac{3}{8}$
   (4) $8\frac{1}{3}$
   (5) $8\frac{5}{8}$

   Estimate: _____

   Answer: _____

3. A piece of wire, $11\frac{1}{4}$ yards long, is cut into 9 equal pieces. What is the length in yards of each piece of wire?

   (1) $1\frac{1}{4}$
   (2) $1\frac{7}{8}$
   (3) $2\frac{1}{8}$
   (4) $2\frac{1}{2}$
   (5) $3\frac{3}{8}$

   Estimate: _____

   Answer: _____

4. A piece of molding is $12\frac{3}{4}$ feet long. How many $2\frac{1}{8}$-foot pieces can be cut from the larger piece?

   (1) 3
   (2) 4
   (3) 5
   (4) 6
   (5) 7

5. What was the average daily snowfall, in inches, during the five-day period shown below?

Snowfall Measurements January 12–16	
Day 1	$6\frac{1}{2}$ in
Day 2	$4\frac{1}{4}$ in
Day 3	8 in
Day 4	$3\frac{3}{4}$ in
Day 5	5 in

   (1) $4\frac{1}{8}$
   (2) $4\frac{1}{4}$
   (3) $5\frac{1}{2}$
   (4) $5\frac{7}{8}$
   (5) $6\frac{1}{4}$

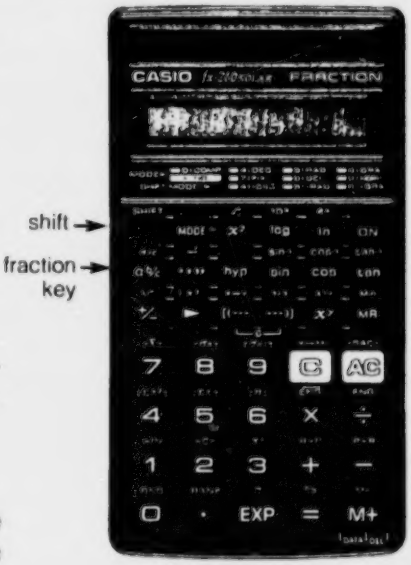
6. John bought a $3\frac{3}{4}$-gallon can of liquid wax to coat his tile walkway. If he uses $1\frac{7}{8}$ gallons on the walkway, how many gallons will he have left for future coats?

   (1) $1\frac{7}{8}$
   (2) $2\frac{1}{8}$
   (3) $2\frac{1}{4}$
   (4) $2\frac{1}{2}$
   (5) $2\frac{5}{8}$

Answers start on page 44.

STRATEGY 11 Solve Fraction Problems Using a Calculator

The **fraction key** on the Casio *fx*-260 calculator makes it easy to work with fractions.



Entering Fractions
To enter the fraction $\frac{2}{3}$, press 2 a b/c 3. The display shows: 2 ⌟ 3

To enter the mixed number $4\frac{3}{8}$, press 4 a b/c 3 a b/c 8. The display shows: 4 ⌟ 3 ⌟ 8

Changing the Form of Fractions
To enter the improper fraction $\frac{6}{4}$, press 6 a b/c 4. The display shows: 6 ⌟ 4. Now press =. The display shows this as a mixed number in lowest terms: 1 ⌟ 1 ⌟ 2, which means $1\frac{1}{2}$.

Above the a b/c key is the **second function,** d/c. With the display showing 1 ⌟ 1 ⌟ 2, press Shift and then d/c. The display changes to the improper fraction 3 ⌟ 2, or $\frac{3}{2}$.

EXAMPLE: A fence post is $7\frac{5}{8}$ feet long. If Kelli cuts off $1\frac{1}{3}$ feet, how long will the post be?

THINK: To save time, I can subtract using a calculator.
Press: 7 a b/c 5 a b/c 8 − 1 a b/c 1 a b/c 3 = The display reads: 6 ⌟ 17 ⌟ 24

SOLUTION: The shortened post will be **$6\frac{7}{24}$ feet** long.

GED Problem

A shampoo bottle holds $2\frac{3}{8}$ cups of shampoo. How many bottles can be filled from a large container holding 80 cups of shampoo?

(1) 31
(2) 33
(3) 34
(4) 38
(5) 40

THINK: I need to divide 80 by $2\frac{3}{8}$. I can do the work quickly on a calculator.

Press: 80 ÷ 2 a b/c 3 a b/c 8 =

The display reads: 33 ⌟ 13 ⌟ 19 or $33\frac{13}{19}$.
The fraction represents part of a bottle. You could fill 33 bottles from 80 cups of shampoo.

ANSWER: (2) 33

TESTWISE
① ② ③ ④ ⑤

Using the fraction functions correctly takes practice. However, once you've mastered them, it is worth the effort.

Apply the Strategy

Directions: Solve the problems below. For problems 1-3, first decide whether it would be easier to use a calculator. Write *Yes* or *No*.

1. An architect needs $\frac{3}{5}$ of an acre for a building, $\frac{5}{12}$ of an acre for parking and driveways, and $\frac{1}{3}$ of an acre for walks and landscaping. How much land, in acres, does the office complex need?

   (1) $\frac{9}{20}$
   (2) $1\frac{3}{20}$
   (3) $1\frac{7}{20}$
   (4) $1\frac{9}{20}$
   (5) $2\frac{1}{20}$

   Use calculator? _____

   Answer: _____

2. Dominica can work up to 20 hours per week. If she works $4\frac{1}{2}$ hours on Monday and $7\frac{1}{4}$ hours on Tuesday, how many more hours can she work that week?

   (1) $8\frac{1}{4}$
   (2) $8\frac{3}{4}$
   (3) $9\frac{1}{4}$
   (4) $8\frac{1}{2}$
   (5) $9\frac{3}{4}$

   Use calculator? _____

   Answer: _____

3. A room measures $8\frac{2}{3}$ yards by $7\frac{3}{4}$ yards. How many square yards of carpeting must be purchased to carpet the room?

   (1) $56\frac{1}{2}$
   (2) $57\frac{1}{9}$
   (3) $59\frac{2}{3}$
   (4) $63\frac{5}{6}$
   (5) $67\frac{1}{6}$

   Use calculator? _____

   Answer: _____

4. A shirt pattern uses $1\frac{7}{8}$ yards of fabric. How many yards of fabric would be needed to make 15 shirts?

   (1) 8
   (2) $20\frac{3}{4}$
   (3) $28\frac{1}{8}$
   (4) $35\frac{1}{2}$
   (5) $43\frac{1}{8}$

5. The chart below shows how a school library committee has allocated the library's budget for the coming year. If the total budget is $12,000, how much will be spent on new books and computers?

Expense	Fraction of Budget
New books	$\frac{7}{16}$
Computers	$\frac{1}{4}$
Carpeting	$\frac{1}{8}$
Special programs	$\frac{3}{16}$

   (1) $3,000
   (2) $3,750
   (3) $4,800
   (4) $5,250
   (5) $8,250

6. Celia has a 14-foot piece of plastic pipe. She cuts three $2\frac{3}{4}$-foot lengths to repair her sprinkling system. What is the length, in feet, of the remaining piece of pipe?

   (1) $4\frac{1}{4}$
   (2) $5\frac{3}{4}$
   (3) $6\frac{3}{4}$
   (4) $7\frac{1}{4}$
   (5) $11\frac{1}{4}$

Answers start on page 44.

STRATEGY 12 Solve Ratio and Proportion Set-Up Problems

A **proportion** is a mathematical statement that two ratios are equal. When you read GED problems, determine if you can represent a problem as a proportion. If you can identify two values to form one ratio, a third value, and an unknown (represent with *x*), you can set up a proportion to solve for the missing value.

EXAMPLE: Sandi bought three tickets to a baseball game for $19.50. At the same rate, how much would she pay for five tickets?

THINK: I will write a proportion using *x* to represent the cost of five tickets.

Step 1: Write the proportion using the ratio *tickets to dollars*: $\frac{\text{tickets}}{\text{dollars}} \quad \frac{3}{\$19.50} = \frac{5}{x}$

Step 2: Solve. Find the two numbers that are diagonal from each other across the equals sign. Multiply these numbers. (This process is often called cross-multiplying.) Then divide by the remaining term: ($19.50 × 5) ÷ 3 = $32.50.

SOLUTION: Five tickets would cost **$32.50.**

On the GED, you may see **set-up problems** that are based on solving a proportion. To answer a set-up problem, read the problem and write a proportion. Write an expression that cross-multiplies and divides by the remaining term. Compare your expression to the options given.

The correct set-up for this example could be written ($19.50 × 5) ÷ 3 or $\frac{\$19.50(5)}{3}$. Both expressions contain the same sequence of operations.

GED Problem

If 6 pounds of fertilizer will cover 1000 square feet of lawn, which of the following expressions could be used to find out how many pounds will be needed to cover 2500 square feet?

(1) $\frac{2500}{6(1000)}$

(2) $(6 \times 1000) \div 2500$

(3) $\frac{6(2500)}{1000}$

(4) $\frac{1000}{6(2500)}$

(5) $(1000 \times 2500) \div 6$

THINK: The answer choices are expressions, so I don't actually have to solve the problem. I should write a proportion and then find the answer choice that performs the operations in the correct order.

Step 1: The problem compares pounds to square feet. Write a proportion, using *x* for the unknown value.

$\frac{\text{pounds}}{\text{square feet}} \quad \frac{6}{1000} = \frac{x}{2500}$

Step 2: To solve, I would multiply 6 and 2500 and divide by 1000. Only option (3) shows this.

ANSWER: (3) $\frac{6(2500)}{1000}$

TESTWISE ① ② ③ ④ ⑤

In a proportion, both ratios have to have the labels in the same order. If you put *pounds* on top in one ratio, *pounds* must also be on top in the other ratio.

Apply the Strategy

Directions: Solve. For problems 1–3, write the correct proportion first. Then choose the correct expression.

1. A scale on a map is 2 inches to 300 miles. Which of the following expressions could be used to find how many miles are between two cities that are 5 inches apart on the map?

   (1) $(300 \times 2) \div 5$
   (2) $(2 \times 5) \div 300$
   (3) $300 \div (2 \times 5)$
   (4) $(300 \times 5) \div 2$
   (5) $5 \div (300\ \ 2)$

   Proportion: _____

   Answer: _____

2. Cathy drives 144 miles on 6 gallons of gas. Which of the following expressions could be used to find how many miles she could drive on a full tank of 13 gallons of gas?

   (1) $\frac{144(6)}{13}$
   (2) $\frac{144(13)}{6}$
   (3) $\frac{6(13)}{144}$
   (4) $\frac{13}{6(144)}$
   (5) $\frac{144}{6(13)}$

   Proportion: _____

   Answer: _____

3. On an assembly line, Marcia can inspect 12 products in 1.5 hours. Which of the following expressions could be used to find how many products she can inspect in 8 hours?

   (1) $1.5 \div (12 \times 8)$
   (2) $12 \div (1.5 \times 8)$
   (3) $\frac{12(1.5)}{8}$
   (4) $\frac{1.5(8)}{12}$
   (5) $\frac{12(8)}{1.5}$

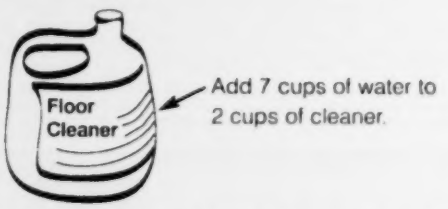
   Proportion: _____

   Answer: _____

4. A cookbook recommends a 12-pound turkey to serve five dinner guests. Which expression could be used to find out how many dinner guests a 20-pound turkey will serve?

   (1) $(5 \times 20) \div 12$
   (2) $5 \times (20 \div 12)$
   (3) $20 \times (5 \div 12)$
   (4) $(5 \times 12) \div 20$
   (5) $(20 \times 12) \div 5$

5. A wood floor cleaner has the following instruction label:



   Stan has 15 cups of floor cleaner left. Which of the following expressions could be used to find how many cups of water he should add to the available cleaner?

   (1) $\frac{15(2)}{7}$
   (2) $\frac{7(2)}{15}$
   (3) $\frac{15(7)}{2}$
   (4) $\frac{15}{2+7}$
   (5) $\frac{15+7}{2}$

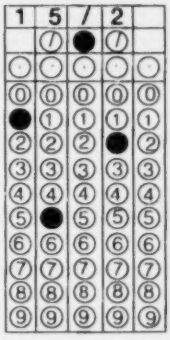
6. Gracie earned $63.75 for five hours of work. Which expression could be used to find how much she would earn for two hours of work?

   (1) $\$63.75 \times 2 \times 5$
   (2) $(2 \times 5) \div \$63.75$
   (3) $\$63.75 \div (2 \times 5)$
   (4) $(\$63.75 \times 5) \div 2$
   (5) $(\$63.75 \times 2) \div 5$

Answers start on page 44.

STRATEGY 13 Grid Answers to Fraction and Ratio Problems

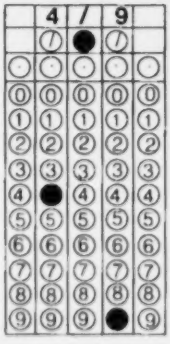
You are used to seeing fractions with one number written over another. For example: $\frac{3}{4}$. Fractions can also be written with a slash mark: 3/4. As you know, you can also write ratios as fractions. The ratio 15:2 can be written $\frac{15}{2}$, or 15/2.



Use the **slash mark** to grid in the answer to a fraction or ratio problem on the standard grid on the GED Math Test answer sheet. You may begin in any column, but make sure you have enough columns to fit the entire answer. The slash mark must be in a column by itself.

Note: If the answer to a problem is a mixed number, you must write it on the grid as an improper fraction. Remember, on Part I, you can use your calculator to change a mixed number to an improper fraction using Shift a b/c.

EXAMPLE: Each day, Kyle walks 20 minutes and swims 45 minutes. What is the ratio of minutes spent walking to minutes spent swimming?



THINK: I need to simplify the ratio to make sure it will fit on the grid.

Step 1: Write the ratio as a fraction and simplify: $\frac{20}{45} = \frac{20 \div 5}{45 \div 5} = \frac{4}{9}$.

Step 2: Fill in the grid. Make sure the slash mark has its own column.

SOLUTION: The ratio of minutes walking to minutes swimming is **4 to 9,** or **4/9.**

GED Problem

A worker needs 20 feet of cable. The longest piece on his truck is $18\frac{3}{8}$ feet. How many feet too short is the cable on the truck?

Mark your answer in the circles in the grid.

THINK: I can subtract to find the answer.

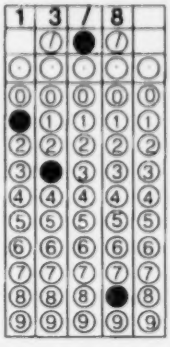
Step 1: Subtract:

$$20 - 18\frac{3}{8} = 19\frac{8}{8} - 18\frac{3}{8} = 1\frac{5}{8}$$

Step 2: Change $1\frac{5}{8}$ to an improper fraction:

$$1\frac{5}{8} = \frac{13}{8}$$

ANSWER: One way to mark 13/8 on the grid is shown to the right.



TESTWISE ① ② ③ ④ ⑤

If a fraction or ratio will not fit in the five-column format of the standard grid, you may need to reduce it to lower terms.

Apply the Strategy

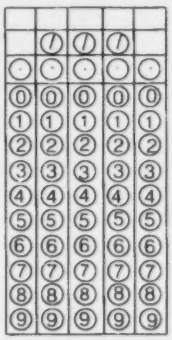
Directions: Solve the problems below. For problems 1–3, if your answer is a mixed number, write it in the space provided. Then write and grid in the answer as an improper fraction. You may use your calculator for problems 1–3.

1. Brannon Heights is divided into six identical lots. If each lot is $\frac{5}{8}$ acre in size, what is the size of Brannon Heights in acres?

   Mark your answer in the circles in the grid.

   Mixed number: _____

   Improper fraction: _____

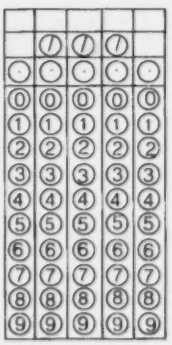


2. Jennifer buys a 12-yard roll of wallpaper on sale. She needs four strips, each $2\frac{2}{3}$ yards in length. How many yards will she have left on the roll after she cuts off the four strips?

   Mark your answer in the circles in the grid.

   Mixed number: _____

   Improper fraction: _____

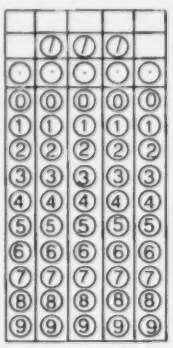


3. Max works in the mailroom for a large company. The service department asks him to ship two machine parts. One weighs $3\frac{1}{6}$ pounds, and the other weighs $2\frac{1}{4}$ pounds. Max has to list the total weight of the shipment on a form. What weight, in pounds, should he write on the form?

   Mark your answer in the circles in the grid.

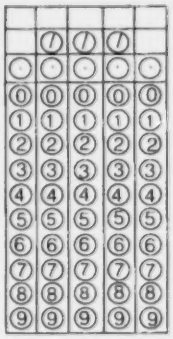
   Mixed number: _____

   Improper fraction: _____



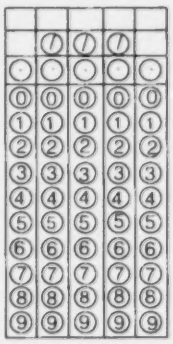
4. In a company election, 55 workers voted for a flextime work schedule, and 125 workers voted against the proposal. What is the ratio of workers in favor of flextime to workers against the proposal?

   Mark your answer in the circles in the grid.



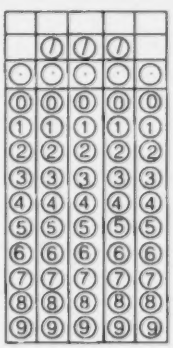
5. Last season, the Hurricanes won 54 games and lost 54 games. What is the ratio of games lost to games played?

   Mark your answer in the circles in the grid.



6. A bakery uses 42 cups of flour to make 24 loaves of bread. What is the simplified ratio of loaves to cups of flour?

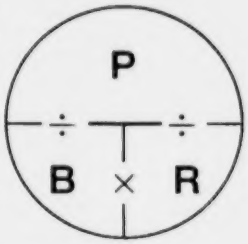
   Mark your answer in the circles in the grid.



Answers start on page 44.

STRATEGY 14 Use the Percent Circle

A percent problem has three elements: a **base** (whole or original) amount, a **part** of that amount, and a **rate** (percent). The rate is always followed by the % symbol. To identify the part and the base, you will have to think about the situation and use common sense.



The percent formula shows the relationship among the three parts. We can write it as **Part = Base × Rate,** or **P = B × R.** If you know two of the elements, you can solve for the third element by using the formula. When you take the GED Math Test, draw the circle shown here on scratch paper. To use the circle, cover the element you are missing. Then perform the indicated operation with the remaining elements.

EXAMPLE: Renetta earns a 12% commission on each sale she makes. If she makes a $450 sale, how much will she earn in commission?

THINK: I know the sale amount (the base) and the rate (percent) of commission. I need to solve for the <u>part</u> (P), which is the amount of commission.

Step 1: Cover P on the percent circle. The circle shows to multiply B and R.

Step 2: Change the rate to a decimal: 12% = 0.12. Multiply: $450 × 0.12 = $54.

SOLUTION: Renetta will earn **$54** in commission on the sale.

GED Problem 1

Scott correctly answered 23 out of 25 questions on a test. What percent of the questions did he answer correctly?

(1) 82%
(2) 88%
(3) 92%
(4) 98%
(5) 108%

THINK: The whole test had 25 questions. Scott answered part of them correctly. The <u>rate</u> (percent) is missing.

Step 1: Cover R. You should divide P by B.
Step 2: Divide: 23 ÷ 25 = 0.92
Convert to a percent: 0.92 = 92%

ANSWER: (3) 92%

GED Problem 2

The dollar amount $256 is 8% of an amount. What is that amount?

(1) $20.48
(2) $32.00
(3) $320.00
(4) $2048.00
(5) $3200.00

THINK: The amount $256 is part of a greater amount. The rate is 8%. I need to find the <u>base</u>.

Step 1: Cover B. You should divide P by R.
Step 2: Convert to a percent: 8% = 0.08
Divide: $256 ÷ 0.08 = $3200

ANSWER: (5) $3200.00

TESTWISE ① ② ③ ④ ⑤

Use common fractions to estimate answers. For example, to find 55% of a number, think 55% is close to 50%, which is equal to $\frac{1}{2}$. What is $\frac{1}{2}$ of the number?

Apply the Strategy

Directions: Solve the problems below. For problems 1–3, first write what you need to find: Rate (percent), Base (whole or original), or Part.

1. Tiffany wants to buy a car for $9000. The bank will help her finance the car if she can make a 15% down payment. How much does she need for the down payment?

   (1) $166
   (2) $600
   (3) $1150
   (4) $1350
   (5) $1500

   Which element is missing? _____

   Answer: _____

2. Lee bought a coat on sale for $144. The sale price was 75% of the original price of the coat. What was the original price?

   (1) $108
   (2) $192
   (3) $219
   (4) $576
   (5) Not enough information is given.

   Which element is missing? _____

   Answer: _____

3. Fifty-eight of the employees at Gauss Electronics are part-time workers. If the company has 145 employees, what percent of the employees work part time?

   (1) 18%
   (2) 25%
   (3) 40%
   (4) 46%
   (5) 58%

   Which element is missing? _____

   Answer: _____

4. A newspaper contained the following advertisement:

   Deluxe Patio Set

   Table, Umbrella, 4 chairs
   Now only $420
   Originally priced at $525

   What percent is the sale price of the original price?

   (1) 12.5%
   (2) 20%
   (3) 70%
   (4) 80%
   (5) 105%

5. John has a goal of putting 5% of every paycheck in his savings account. Last month he earned $1840. If he met his goal, what amount did he put in savings for the month?

   (1) $37
   (2) $92
   (3) $184
   (4) $271
   (5) Not enough information is given.

6. On the first day of a trip, Levy drove 450 miles, or 30% of the total distance. What is the total distance, in miles, that he will drive on the trip?

   (1) 670
   (2) 1350
   (3) 1420
   (4) 1450
   (5) 1500

Answers start on page 45.

STRATEGY 15 Use a Calculator to Solve Percent Problems

Most of the keys on the Casio *fx*-260 calculator have two functions. The primary function is written on the key in white lettering. The second function is written above the key in smaller yellow lettering. To access any second function, you must press Shift and then the key.

The **percent function** on the Casio *fx*-260 calculator is a second function located above the equals key. You can access the percent function by pressing Shift =. You can also do percent problems using decimals. Try both ways to see which method you like best.

EXAMPLE: A newspaper conducted a telephone survey of 900 registered voters. Of the people surveyed, 22% said that they supported Proposition B. How many voters said they supported Proposition B?

THINK: I can use a calculator to find 22% of 900.

Percent function method: 900 × 22 Shift = The display reads: 198.

Decimal method: 900 × .22 = The display reads: 198.

SOLUTION: Of those surveyed, **198** supported the proposition.

GED Problem 1

Jay earns $400 per week. Of his earnings, $16 goes to state income tax. What percent of his earnings is deducted for state income tax?

(1) 20%
(2) 16%
(3) 8%
(4) 4%
(5) 2%

THINK: I can use a calculator to find what percent $16 is of $400.

Percent function 1: 16 ÷ 400 Shift =
Display: 4.

Decimal method 2: 16 ÷ 400 =
Display: 0.04
Convert to a percent: 0.04 = 4%.

ANSWER: (4) 4%

GED Problem 2

A store made 120 sales before noon. If this represented 24% of the store's daily sales, how many sales were made during the day?

(1) 29
(2) 144
(3) 240
(4) 288
(5) 500

THINK: I can use the calculator to solve for the base.

Percent function 1: 120 ÷ 24 Shift =
Display: 500.

Decimal method 2: 120 ÷ .24 =
Display: 500.

ANSWER: (5) 500

TESTWISE ① ② ③ ④ ⑤

Don't mix the two methods. If you use the percent function on your calculator, don't move the decimal point in your answer—it's already in percent form.

Apply the Strategy

Directions: Solve the problems below with your calculator. For problems 1–3, first write whether you will use the *percent function* method or the *decimal* method.

1. In a shipment of 150 computers, 6 were found to have minor defects. What percent of the computers had minor defects?

   (1) 4%
   (2) 6%
   (3) 8%
   (4) 21%
   (5) 40%

   Percent Function or Decimal?_____

   Answer:_____

2. The sales tax rate in a state is 6%. If Susan paid $4.80 in sales tax on an item she purchased, what was the selling price of the item?

   (1) $24.80
   (2) $28.80
   (3) $64.00
   (4) $80.00
   (5) $125.00

   Percent Function or Decimal?_____

   Answer:_____

3. In a company of 50 employees, 62% have completed the required safety course. How many of the employees have completed the safety course?

   (1) 12
   (2) 31
   (3) 34
   (4) 38
   (5) 42

   Percent Function or Decimal?_____

   Answer:_____

4. The following nutrition facts appear on the side panel of a box of breakfast pastries:

Pop Up Pastries	
Serving Size	1 pastry
Total Calories	200
Calories from Fats	54
Carbohydrates	134
Proteins	12

   What percent of the calories in a Pop Up Pastry come from fat?

   (1) 21%
   (2) 27%
   (3) 38%
   (4) 54%
   (5) 56%

5. Tom has $22.64 deducted from his weekly paycheck for retirement. If that amount represents 4% of his weekly income, how much does he earn per week?

   (1) $176
   (2) $453
   (3) $566
   (4) $664
   (5) $905

6. A bank reports that 45% of its customers have only a checking account. If the bank has 860 customers, how many have only a checking account?

   (1) 129
   (2) 215
   (3) 301
   (4) 387
   (5) 473

Answers start on page 45.

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STRATEGY 16 Choose the System That Works Best for You

Fractions, decimals, and percents all represent quantities between 0 and 1. For example, $\frac{1}{2}$, 0.5, and 50% are different ways of expressing the same value. You probably already realize that multiplying by $\frac{1}{2}$ is the same as dividing by 2. You can put that knowledge to work when you need to find 50% of a number. Instead of using the percent key on the calculator or converting 50% to 0.5, simply multiply by $\frac{1}{2}$ or divide by 2.

Whether you are solving a problem on a test or doing math in your daily life, choose the system that is best for you. If you know the common fraction/decimal/percent equivalencies, you will be a better problem solver. Memorize the equivalent amounts below to help you prepare for the GED Math Test.

COMMON EQUIVALENCIES

$\frac{1}{4} = 0.25 = 25\%$	$\frac{1}{5} = 0.2 = 20\%$	$\frac{1}{10} = 0.1 = 10\%$
$\frac{1}{2} = 0.5 = 50\%$	$\frac{2}{5} = 0.4 = 40\%$	$\frac{3}{10} = 0.3 = 30\%$
$\frac{3}{4} = 0.75 = 75\%$	$\frac{3}{5} = 0.6 = 60\%$	$\frac{7}{10} = 0.7 = 70\%$
$\frac{1}{3} = 0.33 = 33\frac{1}{3}\%$	$\frac{4}{5} = 0.8 = 80\%$	$\frac{9}{10} = 0.9 = 90\%$
$\frac{2}{3} = 0.66 = 66\frac{2}{3}\%$		

EXAMPLE: A school has 200 students in its evening program. Of those, $\frac{3}{5}$ are enrolled in more than one class. How many students are taking more than one class?

THINK: I need to find $\frac{3}{5}$ of 200. I will use the decimal equivalent 0.6.

Multiply: $200 \times 0.6 = 120$

SOLUTION: There are **120 students** enrolled in more than one class.

GED Problem

Brent does landscaping for homeowners and small businesses. Of the money he is paid for each job, 25% is profit. What is the amount of profit on a $3600 job?

(1) $900
(2) $1350
(3) $1800
(4) $2250
(5) $2700

THINK: I need to find 25% of $3600. It may be easier to use a fraction to find the answer.

Step 1: Convert the percent to a fraction: $25\% = \frac{1}{4}$.

Step 2: I need to multiply $3600 by $\frac{1}{4}$, which is the same as dividing by 4. Divide: $3600 \div 4 = $900.

ANSWER: (1) $900

TESTWISE ① ② ③ ④ ⑤

Multiplying by a fraction with a 1 in the numerator is the same as dividing by the denominator. Multiplying a number by $\frac{1}{8}$ is the same as dividing the number by 8.

Apply the Strategy

Directions: Solve the problems below. For problems 1–3, put a check next to the system that is easiest for you to use. You may use your calculator for problems 4–6.

1. Of its remaining 40 games of the season, a basketball team will play $\frac{2}{5}$ of its games away from home. How many of the team's remaining games will be away games?

   (1) 8
   (2) 16
   (3) 20
   (4) 24
   (5) 30

   Fraction_____ Decimal_____ Percent_____

   Answer: _____

2. Daniel is paying for a meal at a restaurant with a credit card. He wants to add a 20% tip for the waiter. If the bill totals $45.50, what amount should he add for the tip?

   (1) $4.55
   (2) $6.83
   (3) $9.10
   (4) $9.50
   (5) $10.00

   Fraction_____ Decimal_____ Percent_____

   Answer: _____

3. In a city election, a bond measure must receive more than 50% of the vote to pass. If 2848 people voted, how many votes would represent exactly 50% of the vote?

   (1) 712
   (2) 1374
   (3) 1400
   (4) 1424
   (5) 1566

   Fraction_____ Decimal_____ Percent_____

   Answer: _____

4. The regular price of a CD player is $95. Recently the price was reduced by 10%. What is the new price of the CD player?

   (1) $84.95
   (2) $85.00
   (3) $85.50
   (4) $86.00
   (5) $87.50

5. A youth recreation center has the following numbers of students in its sports leagues:

	Minor Division (9–10 years)	Major Division (11–12 years)
Baseball	72	84
Softball	180	60

   What percent of the total number enrolled in softball are playing in the Minor Division? (*Hint:* Find the total before you find the percent.)

   (1) 25%
   (2) 33%
   (3) 46%
   (4) 52%
   (5) 75%

6. The Landis family spends $\frac{3}{10}$ of its monthly take-home pay on rent. If the family's monthly take-home pay is $2620, how much does the family spend on rent per month?

   (1) $669
   (2) $757
   (3) $786
   (4) $823
   (5) $875

Answers start on page 45.

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GED Practice 2: Fractions, Percents, and Proportions

Part I: You may use a calculator.

For questions 1 through 5, choose the one best answer. Fill in the grid for question 6.

1. Two cities are $5\frac{3}{4}$ inches apart on a map. The map scale says that $\frac{1}{2}$ inch = 10 miles. How many miles apart are the two cities?

   (1) 5
   (2) $11\frac{1}{2}$
   (3) $57\frac{1}{2}$
   (4) 100
   (5) 115

2. Allison can work up to 35 hours per week. If she works $5\frac{1}{2}$ hours on Monday, 6 hours on Tuesday, and $7\frac{3}{4}$ hours on Wednesday, how many more hours can she work during the week?

   (1) $19\frac{1}{4}$
   (2) $15\frac{3}{4}$
   (3) $13\frac{1}{4}$
   (4) $7\frac{3}{4}$
   (5) $5\frac{1}{2}$

3. The following nutrition facts appear on a candy bar label:

Serving Size:	1 package
Calories:	310
Fat Calories:	140

   About what percent of the calories in the candy bar come from fat?

   (1) 17%
   (2) 22%
   (3) 31%
   (4) 45%
   (5) Not enough information is given.

4. In a company of 75 employees, 48% have received their new insurance cards. How many of the employees have their new cards?

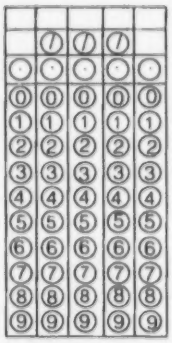
   (1) 27
   (2) 36
   (3) 39
   (4) 48
   (5) 52

5. In Newport, 85% of the residents renewed their village sticker by mail. If 3587 residents renewed by mail, how many residents in all needed to renew their village stickers?

   (1) 4220
   (2) 3502
   (3) 3049
   (4) 538
   (5) 85

6. Each workday, Daniel rides the train 40 minutes and then walks 15 minutes to his job. What is the ratio of minutes spent walking to minutes spent riding the train? Show your answer in fraction form.

   Mark your answer in the circles in the grid below.



Part II: You may not use a calculator.

For questions 7 through 10, choose the one best answer. Fill in the grid for question 11.

7. Of its remaining 25 games of the season, a baseball team will play $\frac{2}{5}$ of its games away from home. How many of the team's remaining games will be away games?

   (1) 5
   (2) 10
   (3) 20
   (4) 23
   (5) 30

8. A scale on a map is 0.5 inch to 75 miles. Which of the following expressions could be used to find how many miles are represented by 6 inches on the map?

   (1) $0.5 \times 75 \times 6$
   (2) $75 \div 0.5 \div 6$
   (3) $75 \div 6 \times 0.5$
   (4) $75 - 6 \div 0.5$
   (5) $6 \div 0.5 \times 75$

9. In a union vote, 255 of the 375 members of Local 222 voted in favor of a new benefits package. What percent of Local 222 voted yes?

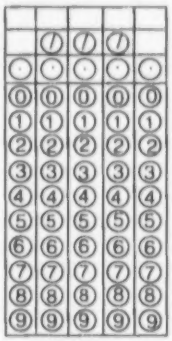
   (1) 12%
   (2) 59%
   (3) 68%
   (4) 87%
   (5) 147%

10. On an assembly line, Taylor can inspect 50 products in 1.5 hours. Which of the following expressions could be used to find how many products he can inspect over 5 days?

    (1) $1.5 \div (50 \times 5)$
    (2) $50 \div (1.5 \times 5)$
    (3) $50 \times 1.5 \times 5$
    (4) $(50 \times 1.5) \div 5$
    (5) Not enough information is given.

11. Last season, the Mustangs won 50 games and lost 25 games. What is the ratio of games lost to games played? Write your answer in fraction form.

    Mark your answer in the circles in the grid below.



Answers start on page 45.

Evaluation and Action Plan

Check your answers. Then evaluate your results and make a plan.

Results:	I need to work more on:
☐ Five or fewer correct • *Need to study more*	☐ Fractions (Questions 1, 2, and 7)
☐ Six to eight correct • *Need to review*	☐ Percents (Questions 3, 4, 5, and 9)
☐ Nine to eleven correct • *Ready to move on*	☐ Set-up problems (Questions 8 and 10)
	☐ Calculator skills (Questions 1, 2, 3, 4, 5, 6)
	☐ Filling in grids (Questions 6 and 11)

Practice GED Test

Part I: You may use a calculator.

For questions 1 through 10, choose the one best answer. Fill in the grid for questions 11 and 12.

1. Niki drives a total of 35.8 miles per day to and from work. If she works 5 days a week, how many miles does she travel to and from work in a week?

   (1) 40.8
   (2) 71.6
   (3) 179.0
   (4) 358.0
   (5) Not enough information is given.

2. Kristyna earns $11.50 per hour. If she works 40 hours per week, how much will she earn in 52 weeks?

   (1) $460
   (2) $2,080
   (3) $2,300
   (4) $23,920
   (5) $27,600

3. A local park district divides its soccer leagues by age. The table below lists the number of youths in each age division.

7–8 years	9–10 years	11–12 years
85	72	68

   What percent of the total number enrolled in soccer are playing in the 9–10 year age division?

   (1) 12.5%
   (2) 22.5%
   (3) 32.0%
   (4) 72.0%
   (5) 100.0%

Questions 4 and 5 refer to the chart below.

Time Card: Eric Vega, 9/20	
Monday	7.5 hours
Tuesday	6.0 hours
Wednesday	7.25 hours
Thursday	8.75 hours
Friday	8.0 hours

4. If Eric earns $9.50 per hour, how much did he earn on Thursday, to the nearest cent?

   (1) $365.75
   (2) $83.13
   (3) $47.50
   (4) $38.50
   (5) $18.25

5. During the week of 9/20, how many hours was an average workday for Eric?

   (1) 6.0
   (2) 7.25
   (3) 7.5
   (4) 8.75
   (5) 37.5

6. A new development is being built on a 52-acre piece of land. Retention ponds and roads will take up 8.5 acres. The remainder will be divided into 58 lots for houses. How many acres will be divided into lots for houses?

   (1) 0.75
   (2) 39.0
   (3) 43.5
   (4) 58.0
   (5) Not enough information is given.

7. A dog bed is constructed of $3\frac{5}{8}$ yards of fabric. How many yards of fabric would be needed to make 10 dog beds?

(1) $6\frac{1}{4}$
(2) $13\frac{5}{8}$
(3) 30
(4) $30\frac{5}{8}$
(5) $36\frac{1}{4}$

8. The chart below shows how a village township has distributed its budget for the coming year. If the township's total budget is $36,000, how much will be spent on snow removal and leaf pickup?

Expense	Fraction of Budget
Road repairs	$\frac{7}{16}$
Snow removal	$\frac{1}{4}$
Leaf pickup	$\frac{1}{8}$
Recycling drop-off	$\frac{3}{16}$

(1) $4,500
(2) $6,750
(3) $9,000
(4) $12,000
(5) $13,500

9. A fast-food restaurant estimates that 75% of drive-through orders include at least one beverage. If that rate holds true, what is the minimum number of beverages purchased in 288 drive-through orders?

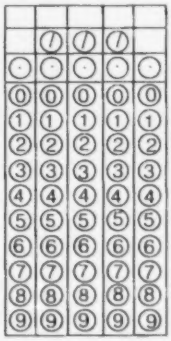
(1) 72
(2) 75
(3) 213
(4) 216
(5) Not enough information is given.

10. A hardware store made 559 sales over the weekend. If this represented 65% of the store's weekly sales, how many sales were made during the entire week?

(1) 35
(2) 65
(3) 363
(4) 624
(5) 860

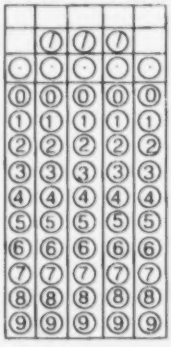
11. A caplet contains 0.825 milligram of vitamin E. How many milligrams of vitamin E are in 2 caplets?

Mark your answer in the circles in the grid.



12. Marina is filling out a messenger form for two packages. One package weighs 5.25 pounds, and the other package weighs $3\frac{1}{2}$ pounds. Marina has to list the total weight of the packages. What weight, in pounds, should she write on the form?

Mark your answer in the circles in the grid.



PART II: You may not use a calculator.

For questions 13 through 22, choose the one best answer. Fill in the grid for questions 23 and 24.

13. Maple Grove has 13,896 registered voters. In the last election, only 5,982 people voted. How many registered voters did not vote?

    (1) 5,982
    (2) 7,914
    (3) 8,004
    (4) 8,114
    (5) 19,878

14. A gift shop carries votive candles in packs of 4 for $2.55 and larger candles for $8.99 each. What would be the total cost of 3 of the larger candles before tax?

    (1) $26.97
    (2) $11.54
    (3) $10.20
    (4) $7.65
    (5) $6.55

15. A carpeting detergent has the following instruction label:

    > Add 2 ounces of detergent for 1 gallon of hot water.

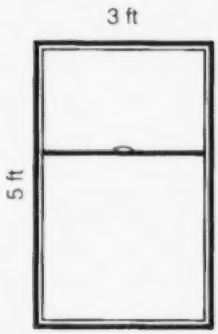
    April wants to mix 3 gallons of hot water with the detergent. Which of the following expressions could be used to find how many ounces of detergent she should add to the water?

    (1) $\frac{1}{3+2}$
    (2) $\frac{1(2)}{3}$
    (3) $\frac{3(2)}{1}$
    (4) $\frac{3}{2+1}$
    (5) $\frac{3+2}{1}$

16. Anna turned in two receipts to petty cash for reimbursement. The receipts were as follows: a $12 parking garage fee and a mileage voucher for $23. Petty cash totaled $105 before Anna turned in her receipts. Which of the following expressions could be used to find how much money was left in petty cash after Anna was reimbursed?

    (1) $105 – 2($12 + $23)
    (2) $105 – $12 + $23
    (3) ($12 × 2) + $23 – $105
    (4) $105 – $23 – $12
    (5) 2($105 – $23 – $12)

17. Richard needs to replace the trim around a window. The measurements are shown below.

    Which of the following expressions could be used to find how many feet of trim Richard will need for the window?

    (1) (3)(5)
    (2) 3 + 5
    (3) 2(3) + 5
    (4) 2(5)(3)
    (5) 2(3 + 5)

18. Swimming classes are being offered at the high school recreation center. Enrollment is limited. If 63 girls and 52 boys sign up, how many swimming classes will be offered?

    (1) 115
    (2) 23
    (3) 11
    (4) 10
    (5) Not enough information is given.

19. Jim worked $10\frac{1}{2}$ hours Monday and $8\frac{3}{4}$ hours Tuesday. How many more hours did he work on Monday than on Tuesday?

(1) $1\frac{3}{4}$
(2) $2\frac{1}{2}$
(3) $2\frac{3}{4}$
(4) $3\frac{1}{4}$
(5) $19\frac{1}{2}$

20. What was the average daily rainfall, in inches, during the five-day period shown here?

Rainfall Measurements

Day 1	$2\frac{1}{2}$ in
Day 2	$1\frac{1}{4}$ in
Day 3	$\frac{3}{4}$ in
Day 4	0 in
Day 5	$1\frac{3}{4}$ in

(1) $1\frac{1}{4}$
(2) 4
(3) $4\frac{3}{4}$
(4) 5
(5) $6\frac{1}{4}$

21. Greg drives 216 miles on 12 gallons of gas. Which of the following expressions could be used to find how many miles he could drive on 10 gallons of gas?

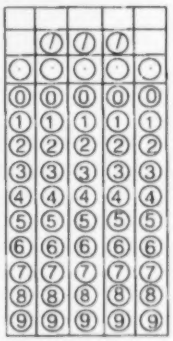
(1) $\frac{216(12)}{10}$
(2) $\frac{216(10)}{12}$
(3) $\frac{10(12)}{216}$
(4) $\frac{10}{12(216)}$
(5) $\frac{216}{10(12)}$

22. On the first day of a trip, Marvin drove 360 miles, or 60% of the total distance. What is the total distance, in miles, that he will drive on the trip?

(1) 216
(2) 300
(3) 420
(4) 600
(5) Not enough information is given.

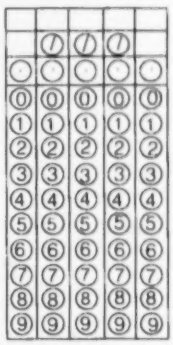
23. A recipe that calls for $\frac{3}{4}$ teaspoon baking soda is being doubled. How many teaspoons of baking soda will be needed?

Mark your answer in the circles in the grid.



24. Out of a total of 280 employees, 35 volunteer their time at charities. What is the ratio of employees who don't volunteer to those who do volunteer?

Mark your answer in the circles in the grid.



Answers start on page 46.

PRACTICE GED TEST EVALUATION AND STUDY PLAN

Check your answers. Fill in the results in the chart and make an action plan.

Questions	Strategy	Pages	Number Correct/Total
13, 14, 16, 17, 18	Problem Solving	2–13	_____/5
1, 2, 4, 5, 6, 11, 12	Decimals	14–17	_____/7
7, 8, 15, 19, 20, 21, 23, 24	Fractions, Ratios, & Proportions	20–28	_____/8
3, 9, 10, 22	Percents	30–33	_____/4
			Total: _____/24

I need to work on:
- ☐ Problem Solving
- ☐ Decimals
- ☐ Fractions, Ratios, and Proportions
- ☐ Percents

Answer Key

STRATEGY 1: USE A PROBLEM-SOLVING PLAN (page 3)

1. Operation: **subtraction**
   Answer: **(2) $765**
   $2500 – $1735 = $765
2. Operation: **division**
   Answer: **(2) 18**
   288 ÷ 16 = 18 points per game
3. Operation: **multiplication**
   Answer: **(5) 22.5**
   7.5 × 3 = 22.5 minutes
4. **(4) $490** Multiply the number of square yards by the price per square yard: 35 × $14 = $490.
5. **(3) $233.62** Add the four amounts: $69.96 + $102.90 + $48.76 + $12.00 = $233.62.
6. **(4) 79.0** Multiply the distance Michi drives each day by the number of days: 15.8 × 5 = 79.

STRATEGY 2: DETERMINE WHETHER THERE IS ENOUGH INFORMATION (page 5)

1. Needed Facts: **$11 per hour and 38 hours**
   Answer: **(1) $418.00**
   Multiply the hourly wage by the number of hours worked: $11 × 38 = $418.00.
2. Needed Facts: **$780 and the number of payments**
   Answer: **(5) Not enough information is given.**
   The number of payments is not given.
3. Needed Facts: **240 seats and $22 per ticket**
   Answer: **(3) $5280**
   Multiply: 240 × $22 = $5280.
4. **(2) 16.8** Subtract: 22 – 5.2 = 16.8 acres. You do not need the number of housing lots.
5. **(3) 25** Divide 300 (the number of sticks in the box) by 12 to get the amount in dozens. 300 ÷ 12 = 25 dozen. To answer the question, you do not need to know how many sticks Shandra needs.
6. **(5) Not enough information is given.** You would need to know the number of beanbags in the box at the other store in order to solve the problem.

STRATEGY 3: USE ESTIMATION TO SOLVE PROBLEMS (page 7)

For items 1–3, your estimate is correct if it is reasonably close to the estimate shown here.

1. Estimate: **$18** $2 × 9 = $18
   Answer: **(3) $20.61** $2.29 × 9 = $20.61
2. Estimate: **$70** Using compatible numbers: $840 ÷ 12 = $70; remember, 7 × 12 = 84.
   Answer: **(2) $72.50** $870 ÷ 12 = $72.50
3. Estimate: **$400**
   Rounding to the nearest 100: $1000 – $400 – $200 = $400
   Answer: **(2) $459**
   $1058 – $389 – $210 = $459
4. **(4) 39** You need to divide 312 by 8 to find the answer. Estimate: 320 ÷ 8 = 40. The answer is close to option (4). Solving for the exact number: 312 ÷ 8 = 39 cartons.
5. **(1) $20** Think: $7.80 is almost $8, and $8 × 8 packages is $64. The price per carton is almost $44, so Janet will save about $20.
6. **(5) $17,000** Round all numbers to the nearest thousand: $22,000 – $3,000 – $2000 = $17,000.

STRATEGY 4: BREAK PROBLEMS INTO SMALLER STEPS (page 9)

1. Step 1: **multiply** Step 2: **add**
   Answer: **(3) 425**
   65 × 4 = 260 miles; 260 + 165 = 425 miles
2. Step 1: **multiply** Step 2: **multiply** Step 3: **add**
   Answer: **(4) $340**
   $12 × 24 subscriptions = $288, and $4 × 13 subscriptions = $52. Add: $288 + $52 = $340.
3. Step 1: **multiply** Step 2: **divide**
   Answer: **(2) $5.40**
   6 × 10 = 60 square feet; $324 ÷ 60 = $5.40
4. **(5) 515** Multiply: cereal: 95 × 2 = 190 calories; milk: 85 calories; and orange juice: 120 × 2 = 240 calories. Add: 190 + 85 + 240 = 515 calories.
5. **(1) 42** Add: 18 + 24 + 90 + 36 = 168 minutes. Divide: 168 ÷ 4 = 42 minutes per repair.
6. **(3) $13,520** Multiply: $13 × 40 hours = $520 per week, and $520 × 26 weeks = $13,520.

STRATEGY 5: SOLVE SET-UP PROBLEMS (page 11)

For items 1–3, your expression should include the same operations as the expression in the answer, although the addition and multiplication operations may not appear in the same order. Your expression should also have the same value as the correct option.

1. **(1) 12($4) + 8($3)** Since state maps are $4 each, the cost of 12 state maps would equal 12($4). Because county maps are $3 each, the cost of 8 county maps would equal 8($3). The total amount would be 12($4) + 8($3).
2. **(4) 7($1.09) – $0.70** One can of dog food is priced at $1.09. The cost of seven cans would equal 7($1.09). Subtract $0.70 from the cost of the seven cans: 7($1.09) – $0.70.
3. **(4)** $\frac{90 + 84 + 86 + 92 + 100}{5}$
   To find the average score, add the test scores and then divide by the number of scores.
4. **(3) 4(24 + 40)** In two windows, there are four lengths and four widths. The total length can be found either by multiplying first and then adding: 4(24) + 4(40) or by adding first and then multiplying: 4(24 + 40).
5. **(2) $30 – [2($9) + $6]** The cost of two tickets is 2($9), and the cost of the popcorn and drinks is $6. The sum of those costs, or 2($9) + $6, must be subtracted from $30. Placing brackets around the amount to be subtracted shows that the entire amount is subtracted.
6. **(2) 4($39 + $5) – $20** The total cost of each fan is the price of $39 plus the shipping cost of $5. Multiply this sum by 4 to find the cost of four fans: 4($39 + $5). Then subtract $20, the amount of the coupon.

STRATEGY 6: USE THE CASIO *fx*-260 CALCULATOR TO SOLVE PROBLEMS (page 13)

1. **yes (2) $172** First multiply the monthly payment by the number of months. Next add the down payment. Then subtract $628.
   Press: 25 [×] 30 [=] [750]
   Press: [+] 50 [=] [800]
   Press: [–] 628 [=] [172]

2. **yes (2) 27,638** Subtract the area of the smaller state from the area of the larger state.
Press: 109806 [−] 82168 [=] [27638.]
3. **Either yes or no** Although you can use your calculator to solve this item, you can solve it very quickly with estimation. Think: $1800 + $400 + $600 = $2800, and $2800 ÷ 4 = $700. Only option (3) is a possible answer.
(3) $734 Using a calculator, press:
1838 [+] 426 [+] 672 [=] [2936.]
[÷] 4 [=] [734.]
4. **(5) 432** In each dining room, the booths will hold 48 people (12 × 4 = 48), the 15 tables will hold 60 people (15 × 4 = 60), and the 6 tables will hold 36 people (6 × 6 = 36). Add to find the total for one dining room, and multiply the total by 3.
Press: 48 [+] 60 [+] 36 [=] [144.]
[×] 3 [=] [432.]
You could also input the following sequence:
12 [×] 4 [+] 15 [×] 4 [+] 6 [×] 6 [=] [144.]
[×] 3 [=] [432.] Note that you have to press the equals key to find the total for one dining room before multiplying by 3.
5. **(1) 51,800** Find the area of one parking lot by multiplying the length by the width. Then multiply by 4.
Press: 70 [×] 185 [×] 4 [=] [51800.]
6. **(4) 289** To find the average of four numbers, add them and divide the sum by four.
Press: 253 [+] 346 [+] 271 [+] 286 [=]
[1156.] [÷] 4 [=] [289.]

Strategy 7: Solve Decimal Problems Using a Calculator (page 15)

1. **Yes, because the question asked for an answer to the nearest tenth.**
(3) 3.8
Add: 4.4 [+] 4.8 [+] 6 [+] 3.6 [+] 1.8 [+] 2.4 [=] 23
Divide: 23 [÷] 6 [=] [3.833333333], which rounds to 3.8 inches.
2. **No, because the exact answer is given.**
(1) 2.45
Subtract: 4.2 [−] 1.75 [=] [2.45]
3. **Yes, since the answer comes to a thousandths decimal place—which needs to be rounded to hundredths (for money).**
(5) $10.35
Multiply: 3.98 [×] 2.6 [=] [10.348], which rounds to $10.35.
4. **(3) $81.38** Multiply Wednesday's hours by the hourly wage: 7.75 [×] 10.5 [=] [81.375], which rounds to $81.38.
5. **(2) 7.4** Add the hours she worked each day and divide by 5, the number of days:
6.5 [+] 8.25 [+] 7.75 [+] 5.25 [+] 9 [=] [36.75] [÷] 5 [=]
[7.35], which rounds to 7.4 hours.
6. **(3) 7** Divide: 550 [÷] 75 [=] [7.333333333]. The decimal portion of the number represents a fraction of a piece of tubing. The plumber needs whole pieces, so only 7 pieces can be cut with an exact length of 75 centimeters. Ignore the decimal remainder, which is part of a piece.

Strategy 8: Grid Answers for Whole Number and Decimal Problems (page 17)

1. **yes**
3.6
Subtract: 25.2 − 21.6 = 3.6 cubic feet
2. **no**
11
Add: 3.4 + 2.8 + 4.8 = 11 miles
3. **yes**
2.1
Multiply: 0.525 × 4 = 2.1 milligrams
4. **47**
Add: 12.7 + 10.8 + 12.4 + 11.1 = 47 gallons
5. **11.25**
Multiply: 15 × 0.75 = 11.25 pounds
6. **156**
Multiply: 6.5 × 24 = 156 hours

GED Practice 1: Whole Numbers and Decimals (pages 18–19)

1. **(4) $198.30** *(Use a Problem-Solving Plan)* Add: $73.85 + $48.97 + $39.53 + $35.95 = $198.30.
2. **(3) $1575** *(Use a Problem-Solving Plan)* Multiply the number of seats by the cost of a ticket for an evening show. 175 × $9 = $1575
3. **(4) 315** *(Break into Smaller Steps)* Break down the problem into steps. Find the distance John would travel in 3 hours at 65 mph: 3 × 65 = 195. Add that distance to the 120 miles already traveled: 120 + 195 = 315 miles.
4. **(3) 346** *(Break into Smaller Steps)* Add the amounts: 282 + 428 + 370 + 285 + 365 = 1730. Divide by the number of months to find the average: 1730 ÷ 5 = 346.
5. **25.66** *(Break into Smaller Steps)* Add the amounts: 24.15 + 26.26 + 23.46 + 28.75 = 102.62. Divide by the number of values: 102.62 ÷ 4 = 25.655, which rounds to 25.66.
6. **(4) 8.5** *(Use a Problem-Solving Plan)* Divide the distance by the rate. 510 miles ÷ 60 miles per hour = 8.5 hours
7. **(5) Not enough information is given.** *(Determine if there Is Enough Information)* You need to know how many payments Carly will make in order to answer the question.
8. **(4)** $\frac{275 + 245 + 288}{3}$
(Set-Up Problems) You would add the scores and divide the sum by the number of games bowled.
9. **(4) 5($0.55) − $0.30** *(Set-Up Problems)* Choose the set-up that shows the cost of 5 cans of soup—5($0.55) minus the amount of the coupon ($0.30).
10. **170** *(Decimal Problems)* Multiply the number of hours worked per day by the number of days. 8.5 × 20 = 170

Strategy 9: Decide Which Operation to Use with Fractions (page 21)

1. **multiplication**
(4) $1220
$\frac{2}{3} \times \$1830 = \frac{2}{\cancel{3}_{1}} \times \frac{\overset{610}{\cancel{1830}}}{1} = \frac{1220}{1} = 1220$
2. **division**
(3) 14
$3\frac{1}{2} \div \frac{1}{4} = \frac{7}{2} \div \frac{1}{4} = \frac{7}{\cancel{2}_{1}} \times \frac{\overset{2}{\cancel{4}}}{1} = \frac{14}{1} = 14$
3. **subtraction**
(1) $1\frac{3}{8}$
$6\frac{1}{4} - 4\frac{7}{8} = 6\frac{2}{8} - 4\frac{7}{8} = 5\frac{10}{8} - 4\frac{7}{8} = 1\frac{3}{8}$ hours

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4. **(5) $1\frac{17}{24}$**

Add: $\frac{1}{3}+1\frac{1}{4}+\frac{1}{8}=\frac{8}{24}+1\frac{6}{24}+\frac{3}{24}=1\frac{17}{24}$ cups

5. **(4) $22\frac{1}{2}$**

Multiply: $36\times\frac{5}{8}=\frac{\cancel{36}^{9}}{1}\times\frac{5}{\cancel{8}_{2}}=\frac{45}{2}=22\frac{1}{2}$ inches

6. **(2) 20**

Divide: $35\div1\frac{3}{4}=\frac{35}{1}\div\frac{7}{4}=\frac{\cancel{35}^{5}}{1}\times\frac{4}{\cancel{7}_{1}}=\frac{20}{1}=20$ books

Strategy 10: Use Estimation with Fraction Problems (page 23)

For items 1–3, your estimate is acceptable if it is reasonably close to the estimate shown here.

1. Estimate: **3 × 3 = 9 miles**
Answer: **(2) $8\frac{2}{5}$**

$2\frac{4}{5}\times3=\frac{14}{5}\times\frac{3}{1}=\frac{42}{5}=8\frac{2}{5}$ miles

2. Estimate: **4 + 1 + 3 = 8 pounds**
Answer: **(3) $7\frac{3}{8}$**

$3\frac{3}{4}+1\frac{1}{8}+2\frac{1}{2}=3\frac{6}{8}+1\frac{1}{8}+2\frac{4}{8}=6\frac{11}{8}=7\frac{3}{8}$ pounds

3. Estimate: **11 ÷ 9 = 1 r2,** or a little more than 1
Answer: **(1) $1\frac{1}{4}$**

$11\frac{1}{4}\div9=\frac{45}{4}\div\frac{9}{1}=\frac{\cancel{45}^{5}}{4}\times\frac{1}{\cancel{9}_{1}}=\frac{5}{4}=1\frac{1}{4}$ yards

4. **(4) 6** Estimate: 12 ÷ 2 = 6.

$12\frac{3}{4}\div2\frac{1}{8}=\frac{51}{4}\div\frac{17}{8}=\frac{\cancel{51}^{3}}{\cancel{4}_{1}}\times\frac{\cancel{8}^{2}}{\cancel{17}_{1}}=\frac{6}{1}=6$ pieces

5. **(3) $5\frac{1}{2}$** Estimate: 7 + 4 + 8 + 4 + 5 = 28, and 28 ÷ 5 = 5 r3. The answer should be a little more than 5.

Add: $6\frac{1}{2}+4\frac{1}{4}+8+3\frac{3}{4}+5=$

$6\frac{2}{4}+4\frac{1}{4}+8+3\frac{3}{4}+5=26\frac{6}{4}=27\frac{1}{2}$

Divide: $27\frac{1}{2}\div5=\frac{55}{2}\div\frac{5}{1}=\frac{\cancel{55}^{11}}{2}\times\frac{1}{\cancel{5}_{1}}=\frac{11}{2}=5\frac{1}{2}$ in

6. **(1) $1\frac{7}{8}$** Estimate: 4 ÷ 2 = 2 gallons

$3\frac{3}{4}-1\frac{7}{8}=3\frac{6}{8}-1\frac{7}{8}=2\frac{14}{8}-1\frac{7}{8}=1\frac{7}{8}$ gallons

Strategy 11: Solve Fraction Problems Using a Calculator (page 25)

1. **yes**
(3) $1\frac{7}{20}$
Press: 3 [a b/c] 5 [+] 5 [a b/c] 12 [+] 1 [a b/c] 3 [=]
The display reads: 1 ⌟17 ⌟ 20
2. **yes or no** As you gain experience, you can probably do this one more quickly using mental math or pencil and paper.
(1) $8\frac{1}{4}$
Think: $4\frac{1}{2}+7\frac{1}{4}=11\frac{3}{4}$ and $20-11\frac{3}{4}=8\frac{1}{4}$.
3. **yes**
(5) $67\frac{1}{8}$
Press: 8 [a b/c] 2 [a b/c] 3 [×] 7 [a b/c] 3 [a b/c] 4 [=]
The display reads: 67 ⌟1 ⌟6.
4. **(3) $28\frac{1}{8}$**
Press: 15 [×] 1 [a b/c] 7 [a b/c] 8 [=]
The display reads: 28 ⌟1 ⌟8.
5. **(5) $8,250**
Add: 7 [a b/c] 16 [+] 1 [a b/c] 4 [=]
The total is 11 ⌟ 16.
Multiply: [×] 12000 [=]
The display reads: 8250.
6. **(2) $5\frac{3}{4}$** You can either multiply $2\frac{3}{4}$ by 3 and then subtract the result from 14, or you can start with 14 and subtract the length three times. The first way is shown.
Multiply: 2 [a b/c] 3 [a b/c] 4 [×] 3 [=] 8 ⌟1 ⌟4
Subtract: 14 [−] 8 [a b/c] 1 [a b/c] 4 [=] 5 ⌟3 ⌟4

Strategy 12: Solve Ratio and Proportion Set-Up Problems (page 27)

1. $\frac{\text{inches}}{\text{miles}}\ \frac{2}{300}=\frac{5}{x}$
(4) (300 × 5) ÷ 2
2. $\frac{\text{miles}}{\text{gallons}}\ \frac{144}{6}=\frac{x}{13}$
(2) $\frac{144(13)}{6}$
3. $\frac{\text{products}}{\text{hours}}\ \frac{12}{1.5}=\frac{x}{8}$
(5) $\frac{12(8)}{1.5}$
4. **(1) (5 × 20) ÷ 12**
$\frac{\text{pounds}}{\text{guests}}\ \frac{12}{5}=\frac{20}{x}$
5. **(3) $\frac{15(7)}{2}$**
$\frac{\text{water}}{\text{cleaner}}\ \frac{7}{2}=\frac{x}{15}$
6. **(5) ($63.75 × 2) ÷ 5**
$\frac{\text{dollars}}{\text{hours}}\ \frac{\$63.75}{5}=\frac{x}{2}$

Strategy 13: Grid In Answers to Fraction and Ratio Problems (page 29)

1. Mixed number: **no**
Grid in: **15/4**
Multiply: $\frac{5}{8}\times6=\frac{5}{\cancel{8}_{4}}\times\frac{\cancel{6}^{3}}{1}=\frac{15}{4}$
2. Mixed number: **$1\frac{1}{3}$**
Grid in: **4/3**
Multiply: $2\frac{2}{3}\times4=\frac{8}{3}\times\frac{4}{1}=\frac{32}{3}=10\frac{2}{3}$

Subtract: $12-10\frac{2}{3}=11\frac{3}{3}-10\frac{2}{3}=1\frac{1}{3}=\frac{4}{3}$
3. Mixed number: **$5\frac{5}{12}$**
Grid in: **65/12**
Add: $3\frac{1}{6}+2\frac{1}{4}=3\frac{2}{12}+2\frac{3}{12}=5\frac{5}{12}=\frac{65}{12}$
4. Grid in: **11/25**

$\frac{55}{125}=\frac{55\div5}{125\div5}=\frac{11}{25}$

5. Grid in: **1/2**
Add to find the games played: 54 + 54 = 108.

$$\frac{54}{108} = \frac{54 \div 54}{108 \div 54} = \frac{1}{2}$$

6. Grid in: **4/7**
Make sure you write the ratio in the order stated in the question: loaves to flour.

$$\frac{24}{42} = \frac{24 \div 6}{42 \div 6} = \frac{4 \text{ loaves}}{7 \text{ cups of flour}}$$

Strategy 14: Use the Percent Circle (page 31)

1. Missing element: **part**
Answer: **(4) $1350**
15% = 0.15; Multiply: $9000 × 0.15 = $1350
2. Missing element: **base**
Answer: **(2) $192**
75% = 0.75; Divide: $144 ÷ 0.75 = $192
3. Missing element: **rate**
Answer: **(3) 40%**
58 ÷ 145 = 0.4, and 0.4 = 40%
4. **(4) 80%**
Solve for rate: $420 ÷ $525 = 0.8, and 0.8 = 80%.
5. **(2) $92**
Solve for part: 5% = 0.05; $1840 × 0.05 = $92.
6. **(5) 1500**
Solve for base: 30% = 0.3; 450 ÷ 0.3 = 1500.

Strategy 15: Use a Calculator to Solve Percent Problems (page 33)

Both the percent function and decimal methods are shown below. Use the method that works best for you.

1. 6 ÷ 150 Shift = [4.] or
6 ÷ 150 = [0.04], which equals 4%
Answer: **(1) 4%**
2. 4.8 ÷ 6 Shift = [80.] or
4.8 ÷ .06 = [80.]
Answer: **(4) $80.00**
3. 50 × 62 Shift = [31.] or
50 × .62 = [31.]
Answer: **(2) 31**
4. **(2) 27%** 54 of the 200 calories come from fat. Solve for rate. Using the percent function:
54 ÷ 200 Shift = [27.]
5. **(3) $566** $22.64 of Tom's income is deducted for retirement. We know that this amount is 4% of his weekly salary. The weekly salary, or base, is missing. Using the percent function: 22.64 ÷ 4 Shift = [566.]
6. **(4) 387** Solve for part:
860 × 45 Shift = [387.]

Strategy 16: Choose the System That Works Best for You (page 35)

Your decision on how to solve problems 1–3 may vary. The system that requires the fewest steps is shown here. Since you need to work quickly on the GED Math Test, choosing the system that requires fewer steps is a good strategy

1. System: **decimal**
Answer: **(2) 16**
The fraction $\frac{2}{5}$ = 0.4. Multiply: 40 × 0.4 = 16.
2. System: **fraction**
Answer: **(3) $9.10**
The percent 20% = $\frac{1}{5}$. To find $\frac{1}{5}$ of a number, divide by 5.
$45.50 ÷ 5 = $9.10
3. System: **fraction**
Answer: **(4) 1424**
50% = $\frac{1}{2}$. Divide by 2 to find $\frac{1}{2}$ of a number.
2848 ÷ 2 = 1424
4. **(3) $85.50** Find the 10% discount: $95 × 0.1 = $9.50; Subtract to find the new price: $95.00 – $9.50 = $85.50.
5. **(5) 75%** Find the total: 180 + 60 = 240.
You know that 180 out of 240 are enrolled in the minor division. The fraction $\frac{180}{240}$ reduces to $\frac{3}{4}$, which equals 75%. You could also divide 180 by 240 on a calculator. The result will be [75.] if you use the percent key and [0.75] if you do not use the percent key. Both represent 75%.
6. **(3) $786** Use 0.3 for $\frac{3}{10}$. Multiply using your calculator: $2620 × 0.3 = $786.

GED Practice 2: Fractions, Percents, and Proportions (pages 36–37)

1. **(5) 115** *(Operations with Fractions)* Divide the number of inches by $\frac{1}{2}$ to find how many $\frac{1}{2}$ inches are in $5\frac{3}{4}$:

$$5\frac{3}{4} \div \frac{1}{2} = \frac{23}{\cancel{4}_{2}} \times \frac{\overset{1}{\cancel{2}}}{1} = \frac{23}{2} = 11\frac{1}{2} = 11.5$$

Multiply by the number of miles represented by $\frac{1}{2}$ inch: 11.5 × 10 = 115.
2. **(2) $15\frac{3}{4}$** *(Operations with Fractions)*
Add the number of hours worked: $5\frac{1}{2} + 6 + 7\frac{3}{4} = 19\frac{1}{4}$.
Subtract from the total possible hours worked:
$35 - 19\frac{1}{4} = 15\frac{3}{4}$.
3. **(4) 45%** *(Percent Circle)* Divide the part (fat calories) by the base (total calories). 140 ÷ 310 = .45 = 45%
4. **(2) 36** *(Percent Circle)* Find the part by multiplying the base by the rate. 75 × .48 = 36
5. **(1) 4220** *(Percent Circle)* Find the base by dividing the part by the rate. 3587 ÷ .85 = 4220
6. **3/8** *(Ratio and Proportion: Grids)* Write the ratio in the order asked for: minutes spent walking to minutes spent riding the train. 15/40 = 3/8
7. **(2) 10** *(Operations with Fractions)* Find $\frac{2}{5}$ of 25.
$\frac{2}{5} \times 25 = 10$ away games
8. **(5) 6 ÷ 0.5 × 75** *(Ratio and Proportion Set-Up)* Choose the set-up that shows how many half inches are in 6 inches (6 ÷ 0.5) multiplied by the number of miles represented by 0.5 inch (75).
9. **(3) 68%** *(Percent Circle)* Divide the part by the base. 255 ÷ 375 = 0.68 = 68%
10. **(5) Not enough information is given.** *(Ratio and Proportion Set-Up)* You need to know the number of hours per day Taylor spends inspecting products.
11. **11/3** *(Ratio and Proportion: Grids)* Add the number of games won and lost to find the number of games played: 50 + 25 = 75. Write your ratio in the order asked for: games lost to games played: $\frac{25}{75} = \frac{1}{3}$.

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PRACTICE GED TEST (pages 38–41)

1. **(3) 179.0** Multiply the number of miles traveled round-trip by the number of days Niki drives to work in one week. 35.8 × 5 = 179
2. **(4) $23,920** Multiply the wage earned per hour by the number of hours worked per work by the number of weeks. $11.50 × 40 × 52 = $23,920
3. **(3) 32.0%** Find the total number of youths enrolled in the soccer leagues: 85 + 72 + 68 = 225. Divide the part (number of 9- and 10-year-olds) by the total: 72 ÷ 225 = 0.32 = 32%.
4. **(2) $83.13** Multiply the number of hours worked on Thursday by the amount earned per hour. 8.75 × $9.50 = 83.125 = $83.13
5. **(3) 7.5** Add to find the total number of hours worked for the week: 7.5 + 6.0 + 7.25 + 8.75 + 8.0 = 37.5. Divide the total by the number of days worked: 37.5 ÷ 5 = 7.5.
6. **(3) 43.5** Subtract the acres set aside for roads and retention ponds from the total acreage. 52 – 8.5 = 43.5
7. **(5) $36\frac{1}{4}$** Multiply the amount of fabric needed for one bed by the number of dog beds.

   $5.25 + 3\frac{1}{2} = 5.25 + 3.5 = 8.75$, or

   $5.25 + 3\frac{1}{2} = 5\frac{1}{4} + 3\frac{2}{4} = 8\frac{3}{4} = \frac{35}{4}$
8. **(5) $13,500** Add the fractions of the budget for snow removal and leaf pickup.

   $\frac{1}{4} + \frac{1}{8} = \frac{2}{8} + \frac{1}{8} = \frac{3}{8}$

   Find $\frac{3}{8}$ of the total budget by multiplying.

   $\$36{,}000 \times \frac{3}{8} = \$13{,}500$
9. **(4) 216** Find the part. Multiply the base by the rate. 288 × 75% = 288 × .75 = 216
10. **(5) 860** Find the whole. Divide the part by the rate. 559 ÷ 65% = 559 ÷ .65 = 860
11. **1.65** Multiply the number of milligrams in one caplet by the number of caplets. 0.825 × 2 = 1.65
12. **8.75 or 35/4** Add the weights of the two packages.

    $5.25 + 3\frac{1}{2} = 5.25 + 3.5 = 8.75$, or

    $5.25 + 3\frac{1}{2} = 5\frac{1}{4} + 3\frac{2}{4} = 8\frac{3}{4} = \frac{35}{4}$

    (You have to mark an improper fraction on the grid.)
13. **(2) 7,914** Subtract to find the number of voters who did not vote. 13,896 – 5,982 = 7,914
14. **(1) $26.97** Multiply the cost of a larger candle by the number of candles. $8.99 × 3 = $26.97
15. **(3) $\frac{3(2)}{1}$**

    Find the set-up that shows how to solve the proportion. $\frac{1 \text{ gal}}{2 \text{ oz}} = \frac{3 \text{ gal}}{? \text{ oz}}$

    Cross multiply and divide. $\frac{3(2)}{1}$
16. **(4) $105 – $23 – $12** Subtract Anna's expenses from the amount in petty cash.
17. **(5) 2(3 + 5)** Richard would need to find the distance around the entire window. He could add the measurements for all 4 sides (3 + 5 + 3 + 5). Since that set-up is not one of the choices, look for the set-up that multiplies the sum of the length and width by 2. 2(3 + 5)
18. **(5) Not enough information is given.** You know the number of boys and girls who signed up, but you do not know the size (how many children) of the swimming classes.
19. **(1) $1\frac{3}{4}$** Subtract to find the difference.

    $10\frac{1}{2} - 8\frac{3}{4} = 10\frac{2}{4} - 8\frac{3}{4} = 9\frac{6}{4} - 8\frac{3}{4} = 1\frac{3}{4}$
20. **(1) $1\frac{1}{4}$** Add the amounts.

    $2\frac{1}{2} + 1\frac{1}{4} + \frac{3}{4} + 0 + 1\frac{3}{4} = 2\frac{2}{4} + 1\frac{1}{4} + \frac{3}{4} + 1\frac{3}{4} = 4\frac{9}{4} = 6\frac{1}{4}$

    Divide the total by the number of days.

    $6\frac{1}{4} \div 5 = \frac{25}{4} \div \frac{5}{1} = \frac{\overset{5}{\cancel{25}}}{4} \times \frac{1}{\underset{1}{\cancel{5}}} = \frac{5}{4} = 1\frac{1}{4}$
21. **(2) $\frac{216(10)}{12}$**

    Find the set-up that shows how to solve the proportion. $\frac{216}{12} = \frac{?}{10}$ Cross multiply and divide.
22. **(4) 600** Divide the part by the rate. 360 ÷ 60% = 360 ÷ .6 = 600
23. **3/2** Multiply $\frac{3}{4}$ by 2: $\frac{3}{4} \times 2 = \frac{6}{4} = \frac{3}{2}$. You cannot grid a mixed number; therefore, grid the improper fraction $\frac{3}{2}$.
24. **7/1** Subtract to find the number of employees who don't volunteer: 280 – 35 = 245. Find the ratio of employees who don't volunteer to those who do: $\frac{245}{35}$. Since this value will not fit in the grid, simplify the fraction: $\frac{245}{35} = \frac{7}{1}$. Be sure to include both parts of the ratio; don't eliminate the 1.

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